

測試報告

Test Report

ISOLA GROUP

號碼(No.) : CV/2019/B0118


日期(Date) : 2019/11/26

頁數(Page): 1 of 12

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) :

樣品名稱(Sample Description) : PREPREG
樣品型號(Style/Item No.) : TACHYON 100G
收件日期(Sample Receiving Date) : 2019/11/12
測試期間(Testing Period) : 2019/11/12 to 2019/11/26

=====
測試結果(Test Results) : 請參閱下一頁 (Please refer to following pages).


Troy Chang / Manager - Tec
Signed for and 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 : 黃色片狀 (YELLOW SHEET)

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result)
				No. 1
鹵素 / Halogen				
鹵素 (氟) / Halogen-Fluorine (F) (CAS No. : 14762-94-8)	mg/kg	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.	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	100000
鹵素 (碘) / Halogen-Iodine (I) (CAS No. : 14362-44-8)	mg/kg		50	n. d.
全氟辛烷磺酸 / Perfluorooctane sulfonates (PFOS-Acid, Metal Salt, Amide)	mg/kg	參考US EPA 3550C (2007), 以液相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by LC/MS.	10	n. d.
全氟辛酸 / PFOA (CAS No. : 335-67-1)	mg/kg		10	n. d.
四溴雙酚-A / Tetrabromobisphenol A (TBBP-A) (CAS No. : 79-94-7)	mg/kg	參考Global SOP RSTS-E&E-121 (2012), 以液相層析/質譜儀分析. / With reference to Global SOP RSTS-E&E-121 (2012). Analysis was performed by LC/MS.	10	n. d.
雙酚 A / Bisphenol A (CAS No. : 80-05-7)	mg/kg	參考RSTS-CHEM-239-1 (2016), 以超高效能液相層析串聯質譜儀檢測. / With reference to RSTS-CHEM-239-1 (2016). Analysis was performed by UPLC-MSMS.	1	n. d.
聚氯乙烯 / Polyvinyl chloride (PVC)	**	以紅外光譜分析及焰色法檢測. / Analysis was performed by FTIR and FLAME Test.	-	Negative

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result)
				No. 1
砷 / Arsenic (As)	mg/kg	參考US EPA 3052 (1996), 以感應耦合電漿發射光譜儀檢測。 / With reference to US EPA 3052 (1996). Analysis was performed by ICP-OES.	2	n. d.
鈹 / Beryllium (Be)	mg/kg		2	n. d.
銻 / Antimony (Sb)	mg/kg		2	n. d.
鎳 / Nickel (Ni)	mg/kg		2	4.27
錫 / Tin (Sn)	mg/kg		2	n. d.
磷 / Phosphorus (P)	mg/kg		2	60.5
二丁基錫 / Dibutyl Tin (DBT)	mg/kg	參考ISO 17353 (2004), 以氣相層析儀/火焰光度偵測器檢測。 / With reference to ISO 17353 (2004). Analysis was performed by GC/FPD.	0.03	n. d.
三丁基錫 / Tributyl Tin (TBT)	mg/kg	參考ISO 17353 (2004), 以氣相層析儀/火焰光度偵測器檢測。 / With reference to ISO 17353 (2004). Analysis was performed by GC/FPD.	0.03	n. d.
二辛基錫 / Dioctyl Tin (DOT)	mg/kg	參考ISO 17353 (2004), 以氣相層析儀/火焰光度偵測器檢測。 / With reference to ISO 17353 (2004). Analysis was performed by GC/FPD.	0.03	n. d.
三苯基錫 / Triphenyl Tin (TphT)	mg/kg	參考ISO 17353 (2004), 以氣相層析儀/火焰光度偵測器檢測。 / With reference to ISO 17353 (2004). Analysis was performed by GC/FPD.	0.03	n. d.
氧化雙三丁基錫 / Bis(tributyltin)oxide (TBTO) (CAS No. : 56-35-9)	mg/kg	參考ISO 17353 (2004), 以氣相層析儀/火焰光度偵測器檢測; 由三丁基錫測試結果計算得之。 / With reference to ISO 17353 (2004). Analysis was performed by GC/FPD. Calculated from the result of Tributyl Tin (TBT).	0.03 (▲)	n. d.

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測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	MDL	結果 (Result)
				No. 1
總揮發性有機物質 / Total Volatile Organic Compounds (TVOC)	mg/kg	以頂空氣體進樣裝置，連接氣相層析儀/質譜儀檢測。 / Analysis was performed by Headspace linked GC/MS. (測試條件 / Test Condition: 90°C, 30 mins)	1	51.3

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)
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)	1.024

參數換算表 / Parameter Conversion Table : http://twap.sgs.com/sgsrsts/chn/download-REACH_tw.asp

PFOS參考資訊(Reference Information) : 持久性有機污染物 POPs - (EU) 2019/1021

PFOS濃度在物質或製備中不得超過0.001%(10ppm)，在半成品、成品或零部件中不得超過0.1%(1000ppm)，在紡織品或塗層材料中不得超過 $1\mu\text{g}/\text{m}^2$ 。

(Outlawing PFOS as substances or preparations in concentrations above 0.001% (10ppm), in semi-finished products or articles or parts at a level above 0.1%(1000ppm), in textiles or other coated materials above $1\mu\text{g}/\text{m}^2$.)

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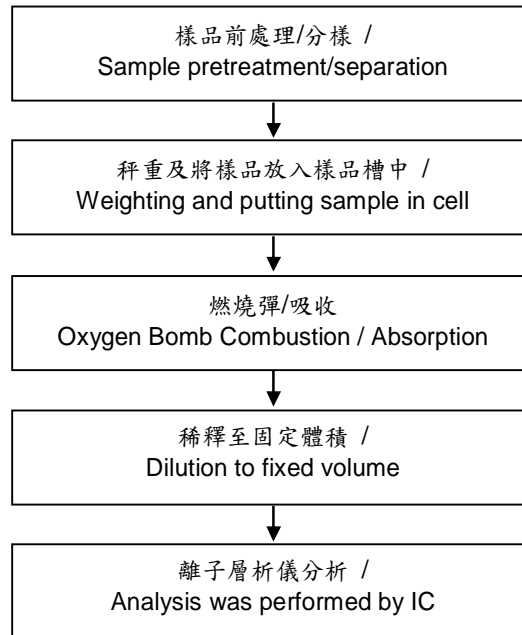
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鹵素分析流程圖 / Analytical flow chart - Halogen

- 測試人員：陳恩臻 / Technician: Rita Chen
- 測試負責人：張啟興 / Supervisor: Troy Chang



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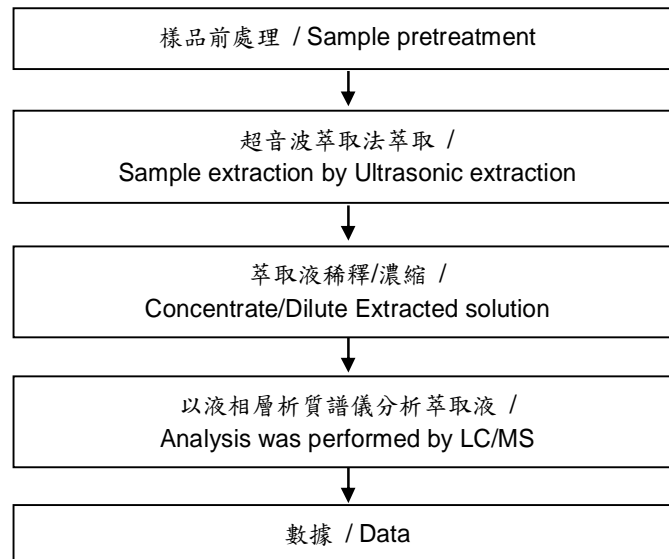
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全氟辛酸/全氟辛烷磺酸分析流程圖 / Analytical flow chart - PFOA/PFOS

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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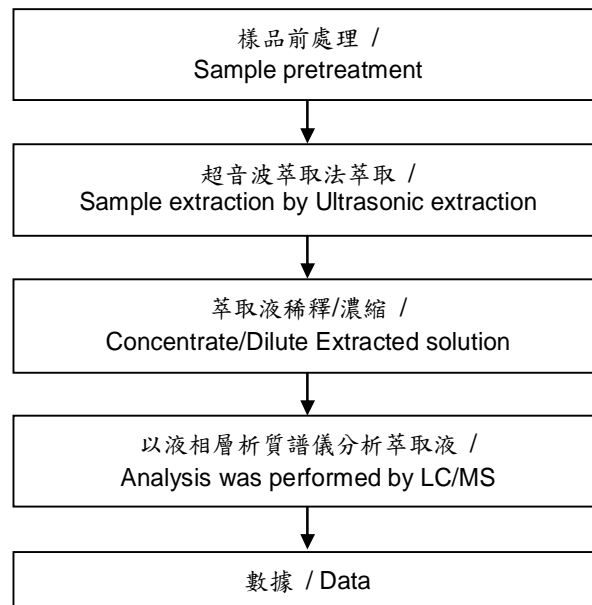
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四溴雙酚-A 分析流程圖 / Analytical flow chart - TBBP-A

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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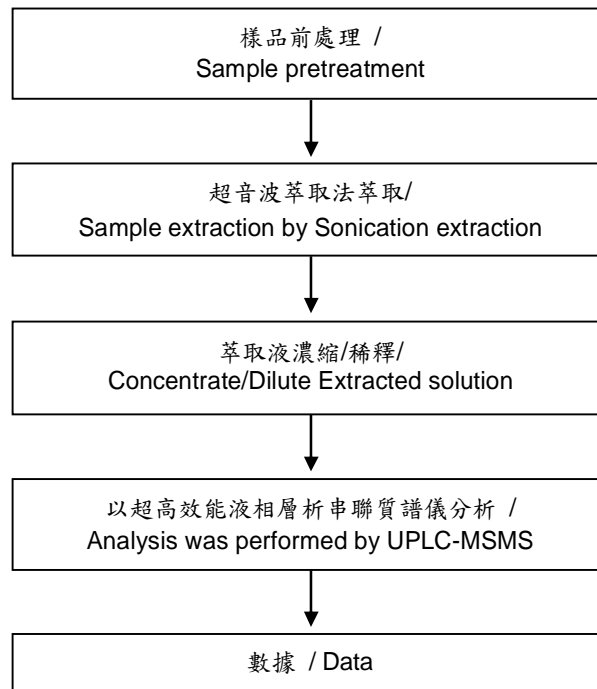
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雙酚A分析流程圖 / Analytical flow chart - Bisphenol A

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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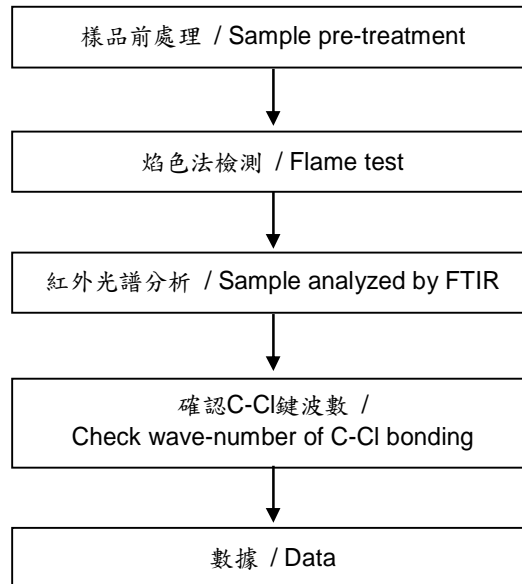
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聚氯乙稀物質判定分析流程圖 / Analysis flow chart - PVC

- 測試人員：涂雅琴 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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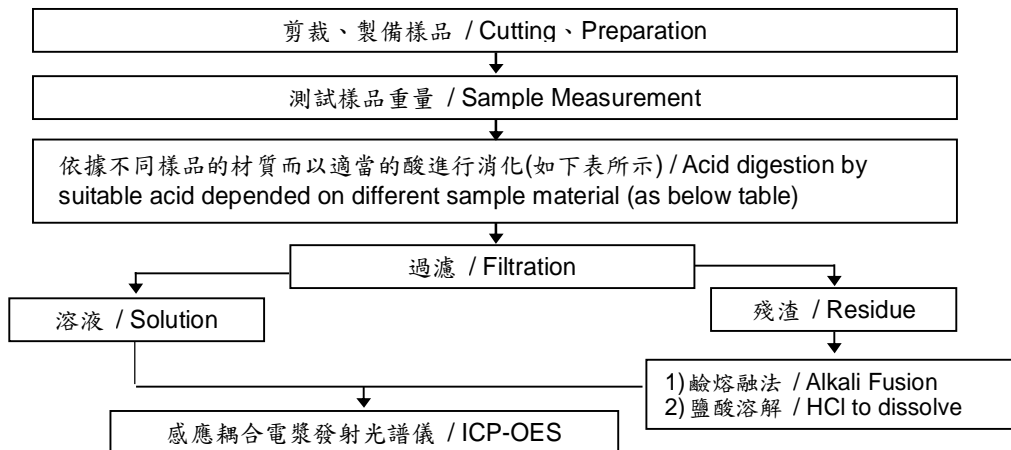
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根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.

- 測試人員：陳恩臻 / Technician: Rita Chen
- 測試負責人：張啟興 / Supervisor: Troy Chang

元素以 ICP-OES 分析的消化流程圖
(Flow Chart of digestion for the elements analysis performed by ICP-OES)



鋼,銅,鋁,焊錫 / Steel, copper, aluminum, solder	王水,硝酸,鹽酸,氫氟酸,雙氧水 / Aqua regia, HNO ₃ , HCl, HF, H ₂ O ₂
玻璃 / Glass	硝酸,氫氟酸 / HNO ₃ /HF
金,鉑,鈀,陶瓷 / Gold, platinum, palladium, ceramic	王水 / Aqua regia
銀 / Silver	硝酸 / HNO ₃
塑膠 / Plastic	硫酸,雙氧水,硝酸,鹽酸 / H ₂ SO ₄ , H ₂ O ₂ , HNO ₃ , HCl
其他 / Others	加入適當的試劑至完全溶解 / Added appropriate reagent to total digestion

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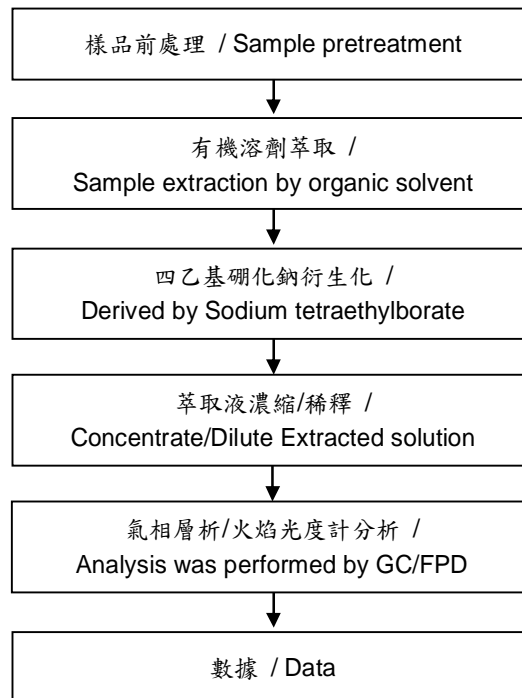
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有機錫分析流程圖 / Analytical flow chart - Organic-Tin

- 測試人員：涂雅苓 / Technician: Yaling Tu
- 測試負責人：張啟興 / Supervisor: Troy Chang



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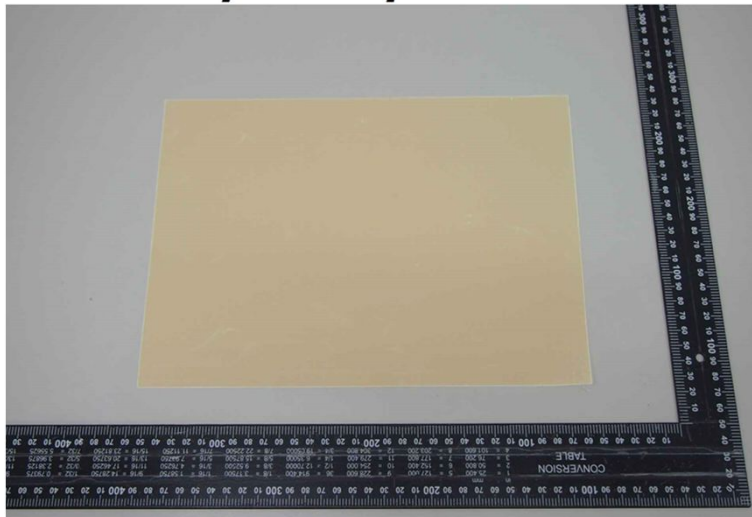
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* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。
(The tested sample / part is marked by an arrow if it's shown on the photo.)

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