

測試報告

Test Report

號碼(No.): EKR23C01108

日期(Date): 20-Dec-2023

頁數(Page): 1 of 11

國亨化學股份有限公司 (GPPC CHEMICAL CORPORATION)

高雄市路竹區長興路66號 (NO.66, CHANG HSIN ROAD, LU-CHU DIST., KAOHSIUNG 821-50, 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 the applicant as) :

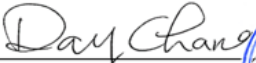
送樣廠商(Sample Submitted By) : 國亨化學股份有限公司 (GPPC CHEMICAL CORPORATION)
樣品名稱(Sample Name) : HIPS
樣品型號(Style/Item No.) : PS-316、PS-333、PS-350、PS-350S、PS-350K、PS-302、PS-350HF

=====
收件日(Sample Receiving Date) : 13-Dec-2023
測試期間(Testing Period) : 13-Dec-2023 to 20-Dec-2023

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) 其他測試項目請見下一頁。(Please refer to next pages for the 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.)


報告簽署人/張伯睿 博士/部經理
Ray Chang, Ph.D./ Department Manager
Signed for and on behalf of
SGS TAIWAN LTD.
化學實驗室-高雄/Chemical Laboratory-Kaohsiung



PIN CODE: 54A45B6F

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測試部位敘述 (Test Part Description)

No.1 : 白色塑膠粒 (WHITE PLASTIC PELLETS)

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)) | 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)) | 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)) | 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 Cr(VI) (Hexavalent Chromium Cr(VI)) | 參考IEC 62321-7-2: 2017 · 以紫外光-可見光分光光度計分析。(With reference to IEC 62321-7-2: 2017, analysis was performed by UV-VIS.) | mg/kg | 8 | n.d. | 1000 |
| 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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高雄市路竹區長興路66號 (NO.66, CHANG HSIN ROAD, LU-CHU DIST., KAOHSIUNG 821-50, 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)) | 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)) | | mg/kg | 50 | n.d. | 1000 |
| 鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl phthalate (DIBP)) | | mg/kg | 50 | n.d. | 1000 |
| 鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-(2-ethylhexyl) phthalate (DEHP)) | | mg/kg | 50 | n.d. | 1000 |
| 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. | - |
| 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. | - |

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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 | |
| 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) | | mg/kg | 50 | n.d. | - |
| 溴 (Br) (Bromine (Br)) (CAS No.: 10097-32-2) | | mg/kg | 50 | n.d. | - |
| 碘 (I) (Iodine (I)) (CAS No.: 14362-44-8) | | mg/kg | 50 | 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. 除非另有說明 · 參照ILAC-G8:09/2019 · 採用簡單二元(w=0)允收規則進行符合性判定 ; 根據此規則 · 符合性結果之判定係以測試結果與限值做比較。(Unless otherwise stated , the decision rule for conformity reporting is based on Binary Statement for Simple Acceptance Rule (w=0) stated in ILAC-G8:09/2019. According to this rule, the judgement of conformity is based on the comparing test results with limits.)

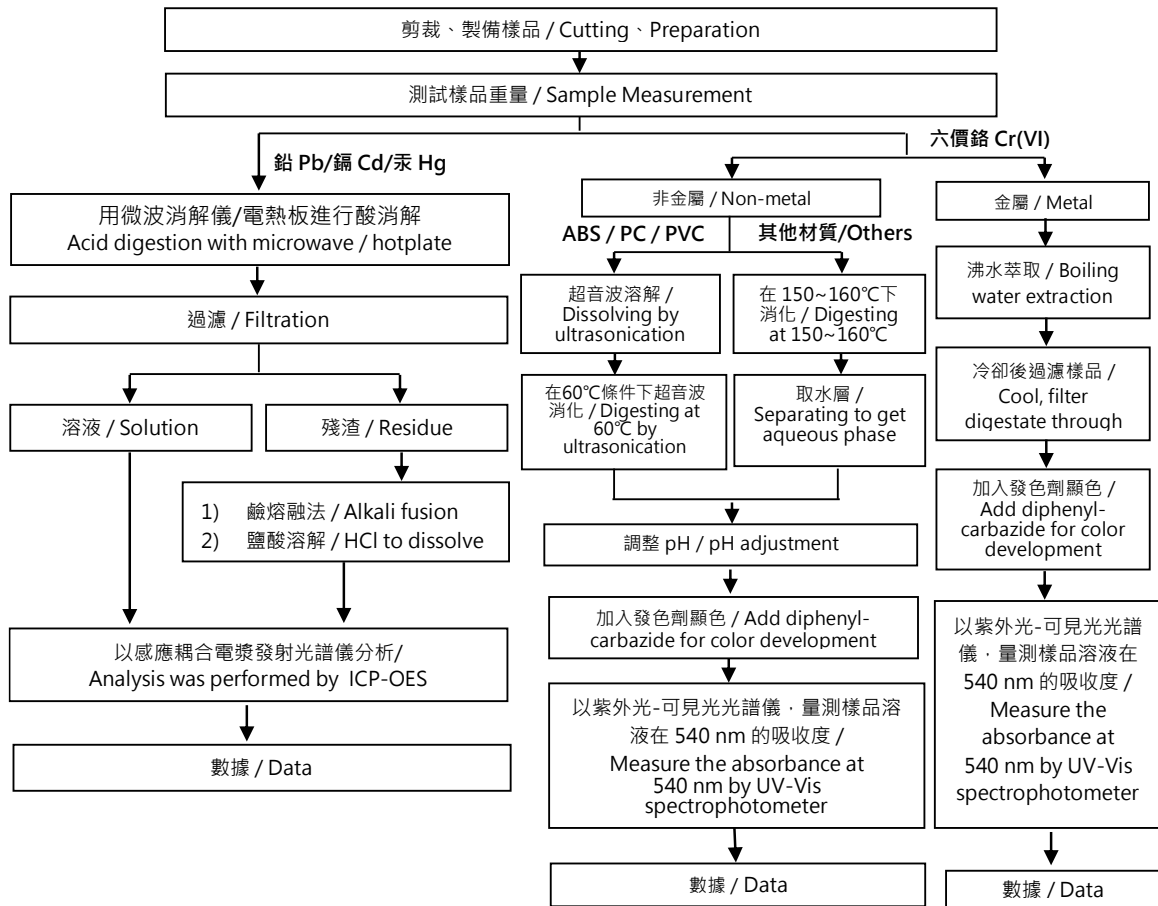
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重金屬流程圖 / Analytical flow chart of Heavy Metal

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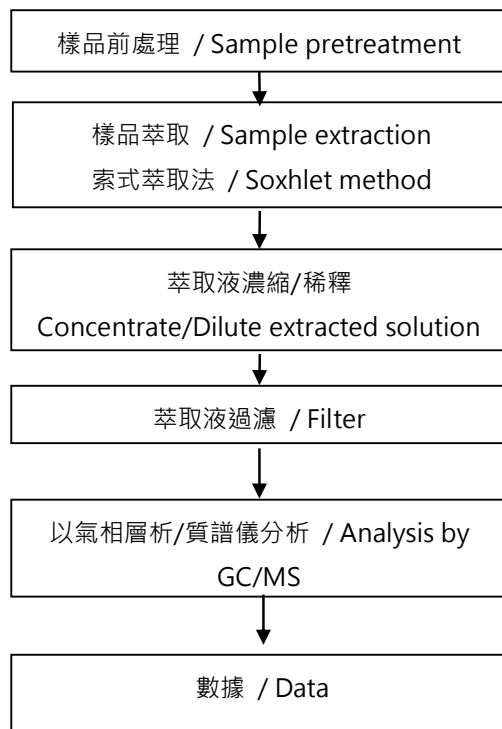
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多溴聯苯/多溴聯苯醚 分析流程圖 / PBB/PBDE analytical FLOW CHART



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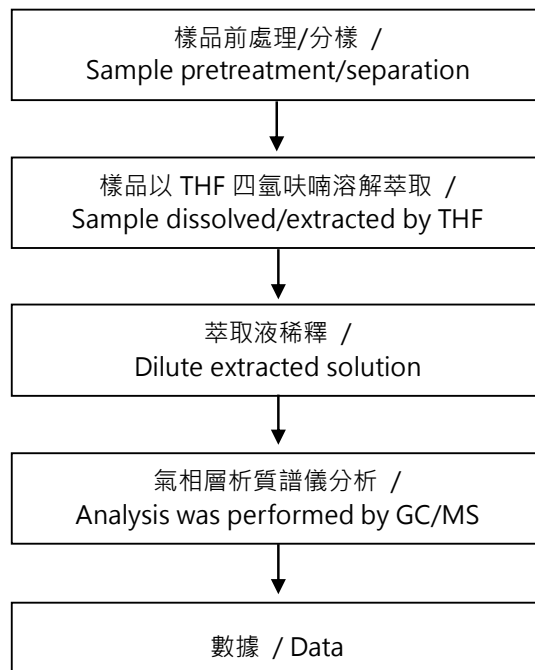
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可塑劑分析流程圖 / Analytical flow chart of phthalate content

【測試方法/Test method: IEC 62321-8】



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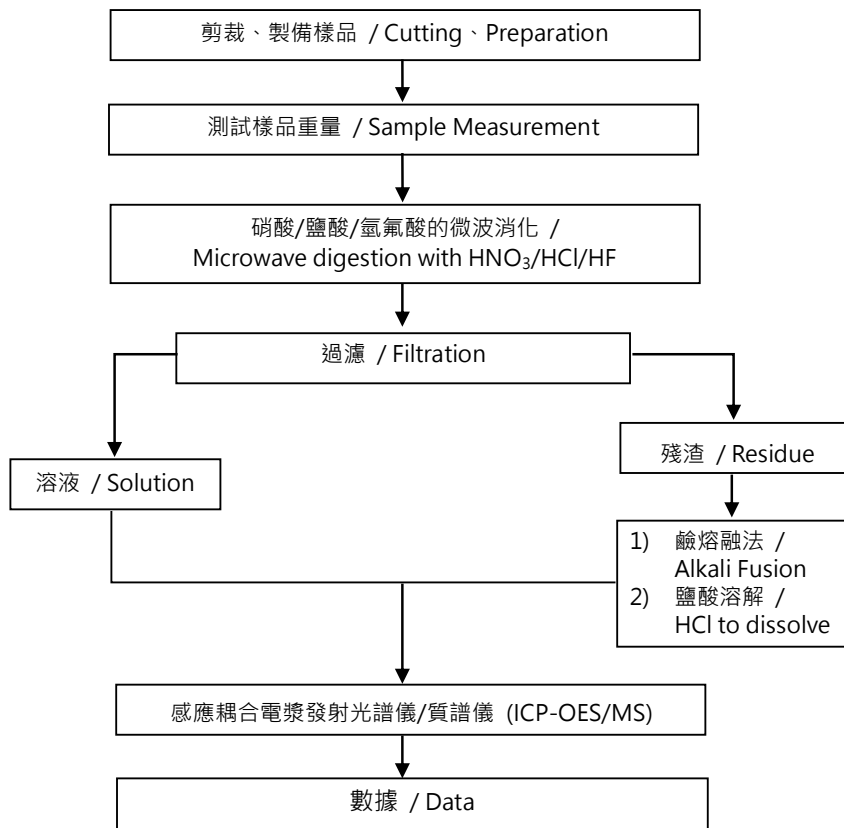
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元素(含重金屬)分析流程圖 / Analytical flow chart of Elements (Heavy metal included)

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 3051、US EPA 3052】

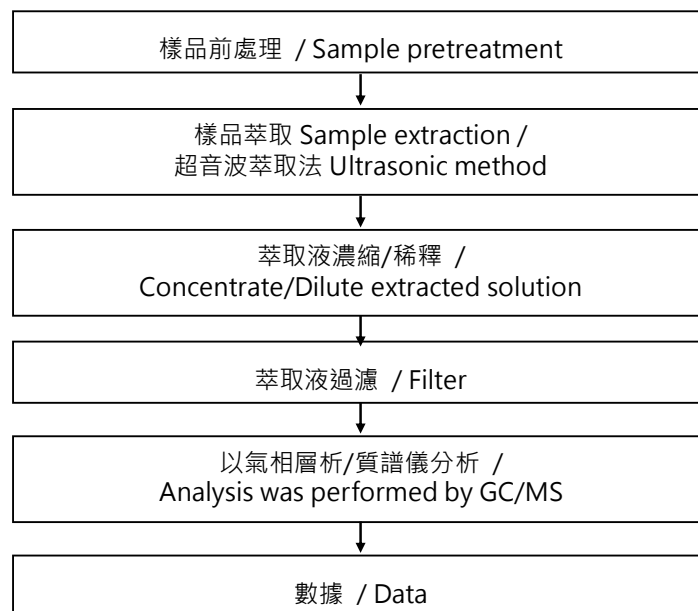


* US EPA 3051 方法未添加氫氟酸 / US EPA 3051 method does not add HF.

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

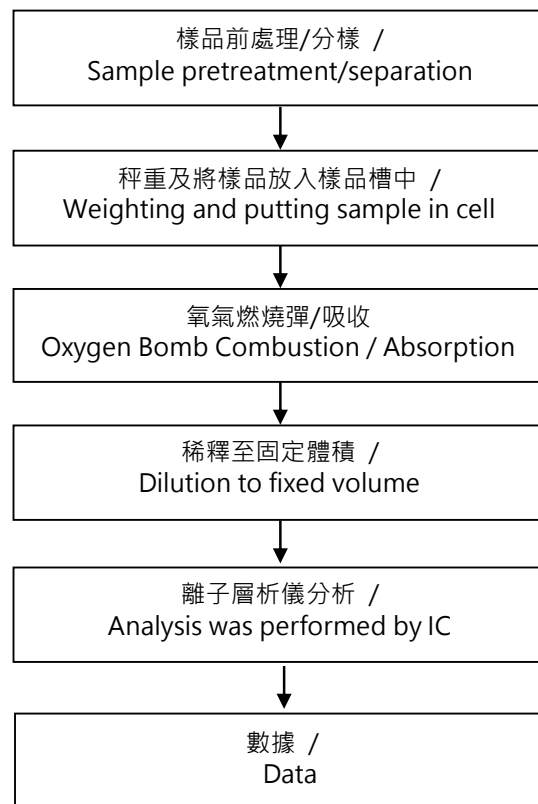


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鹵素分析流程圖 / Analytical flow chart of Halogen



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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.)

EKR23C01108



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