

Test Report

號碼(No.): EKR21A00361 日期(Date): 14-Oct-2021 頁數(Page): 1 of 13

台灣麥德美股份有限公司 (MACDERMID PERFORMANCE SOLUTIONS TAIWAN LTD.) 新竹縣湖口鄉光復北路77號 (77 KUANG FU N. RD, HSIN-CHU ENLARGED INDUSTRIAL PARK, HSIN-CHU TAIWAN)

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) 台灣麥德美股份有限公司 (MACDERMID PERFORMANCE SOLUTIONS

TAIWAN LTD.)

樣品名稱(Sample Name) MICROFAB CU MSA 100 MU, MICROFAB CU MSA 100 R,

> MICROFAB CU MSA 200 MU, MICROFAB CU MSA 200 R, MICROFAB NF ACID, MICROFAB SC COPPER SULFATE

收件日(Sample Receiving Date) 06-Oct-2021

測試期間(Testing Period) 06-Oct-2021 to 13-Oct-2021

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) 測試需求(Test Requested)

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.)

Ray Chang, Ph.D./ Department M Signed for and on behalf SGS TAIWAN LTD. 化學實驗室-高雄/Chemical Laboratory-Kaohsiung



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測試部位敘述 (Test Part Description)

No.1 : 藍色液體(客戶自行調配之樣品) (BLUE LIQUID (SAMPLE IS BLENDED BY CLIENT))

測試結果 (Test Results)

測試項目 (Test Items)	測試方法 (Method)	單位 (Unit)	MDL	結果 (Result)
鎘 (Cd) (Cadmium (Cd)) (CAS No.: 7440-43-9)	参考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	No.1 n.d.
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.
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 (CrVI) (Hexavalent Chromium Cr(VI)) (CAS No.: 18540-29-9)	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.
一溴聯苯 (Monobromobiphenyl)		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 (Tetrabromobipenyl)		mg/kg	5	n.d.
五溴聯苯 (Pentabromobiphenyl)	參考IEC 62321-6: 2015·以氣相層析儀/質譜儀	mg/kg	5	n.d.
六溴聯苯 (Hexabromobiphenyl)	分析。(With reference to IEC 62321-6: 2015,	mg/kg	5	n.d.
七溴聯苯 (Heptabromobiphenyl)	analysis was performed by GC/MS.)	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 Hill the Till (a.e.				No.1
一溴聯苯醚 (Monobromodiphenyl ether)		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)	參考IEC 62321-6: 2015,以氣相層析儀/質譜儀	mg/kg	5	n.d.
六溴聯苯醚 (Hexabromodiphenyl ether)	分析。(With reference to IEC 62321-6: 2015,	mg/kg	5	n.d.
七溴聯苯醚 (Heptabromodiphenyl ether)	analysis was performed by GC/MS.)	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		mg/kg	50	n.d.
phthalate (BBP)) (CAS No.: 85-68-7)				
鄰苯二甲酸二丁酯 (DBP) (Dibutyl		mg/kg	50	n.d.
phthalate (DBP)) (CAS No.: 84-74-2)				
鄰苯二甲酸二異丁酯 (DIBP) (Diisobutyl		mg/kg	50	n.d.
phthalate (DIBP)) (CAS No.: 84-69-5)				
鄰苯二甲酸二(2-乙基己基)酯 (DEHP) (Di-		mg/kg	50	n.d.
(2-ethylhexyl) phthalate (DEHP)) (CAS	參考IEC 62321-8: 2017,以氣相層析儀/質譜儀			
No.: 117-81-7)	分析。(With reference to IEC 62321-8: 2017,			
鄰苯二甲酸二異壬酯 (DINP) (Diisononyl	analysis was performed by GC/MS.)	mg/kg	50	n.d.
phthalate (DINP)) (CAS No.: 28553-12-0,				
68515-48-0)				
鄰苯二甲酸二異癸酯 (DIDP) (Diisodecyl		mg/kg	50	n.d.
phthalate (DIDP)) (CAS No.: 26761-40-0,				
68515-49-1)				
鄰苯二甲酸二正辛酯 (DNOP) (Di-n-octyl		mg/kg	50	n.d.
phthalate (DNOP)) (CAS No.: 117-84-0)				



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測試項目	測試方法	單位	MDL	結果
(Test Items)	(Method)	(Unit)		(Result)
				No.1
氟 (F) (Fluorine (F)) (CAS No.: 14762-94-		mg/kg	50	n.d.
8) = (CI) (CI : (CI) (CAC I 22527	 		F.0	
氯 (Cl) (Chlorine (Cl)) (CAS No.: 22537-	參考BS EN 14582: 2016 · 以離子層析儀分析。	mg/kg	50	n.d.
15-1)	(With reference to BS EN 14582: 2016, analysis	/1	Ε0	
溴 (Br) (Bromine (Br)) (CAS No.: 10097-	was performed by IC.)	mg/kg	50	n.d.
32-2)			Ε0	12 d
碘 (I) (Iodine (I)) (CAS No.: 14362-44-8)	△×IC FDA 2052.100C 以供应细入雨悠愁针火	mg/kg	50 2	n.d.
銻 (Sb) (Antimony (Sb)) (CAS No.: 7440- 36-0)	参考US EPA 3052: 1996・以感應耦合電漿發射光 鎌俸分析。(Mith reference to US EPA 2052)	mg/kg	2	n.d.
30-0)	譜儀分析。(With reference to US EPA 3052: 1996, analysis was performed by ICP-OES.)			
鈹 (Be) (Beryllium (Be)) (CAS No.: 7440-	参考US EPA 3052: 1996 · 以感應耦合電漿發射光	ma/ka	2	n.d.
数 (be) (beryllium (be)) (CAS No.: 7440- 41-7)	iii 儀分析。(With reference to US EPA 3052:	mg/kg	2	n.a.
(41-7)	1996, analysis was performed by ICP-OES.)			
全氟辛酸 (PFOA)及其鹽類	1990, analysis was performed by fer OLS.)	mg/kg	0.01	n.d.
(Perfluorooctanoic acid (PFOA) and it's		mg/kg	0.01	11.0.
salt) (CAS No.: 335-67-1 and its salts)	 参考CEN/TS 15968: 2010 · 以液相層析串聯質譜			
全氟辛烷磺酸(PFOS)及其鹽類	養分析。(With reference to CEN/TS 15968:	mg/kg	0.01	n.d.
(Perfluorooctane sulfonate (PFOS) and	2010, analysis was performed by LC/MS/MS.)	mg/kg	0.01	11.0.
it's salt) (CAS No.: 1763-23-1 and its	2010, analysis was performed by 20, 1110, 1110.			
salts)				
聚氯乙烯 (Polyvinyl chloride) (PVC)	参考ASTM E1252: 2013 · 以傅立葉轉換紅外線光	**	-	Negative
	譜儀及焰色法分析。(With reference to ASTM			l regame
	E1252: 2013, analysis was performed by FT-IR			
	and Flame Test.)			
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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.



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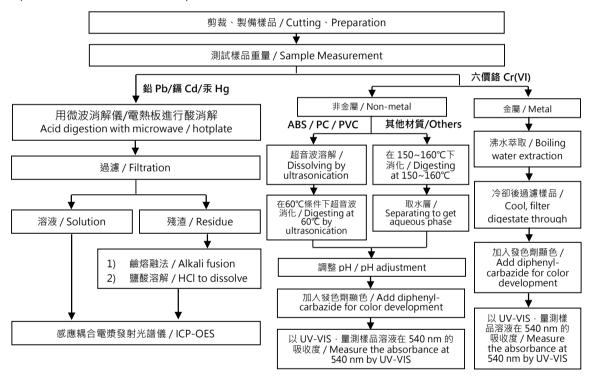
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重金屬流程圖 / Analytical flow chart of Heavy Metal

根據以下的流程圖之條件,樣品已完全溶解。(六價鉻測試方法除外)

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr^{6+} test method excluded)





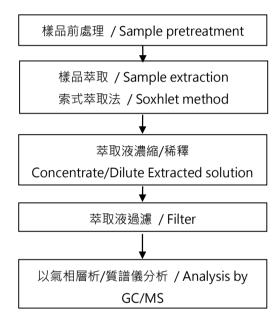
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多溴聯苯/多溴聯苯醚 分析流程圖 / PBB/PBDE analytical FLOW CHART





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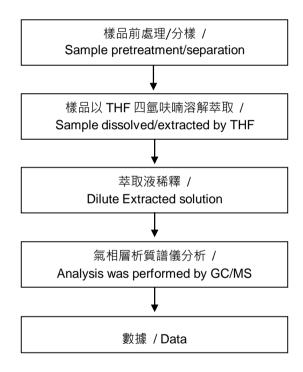
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可塑劑分析流程圖 / Analytical flow chart of phthalate content

【測試方法/Test method: IEC 62321-8】





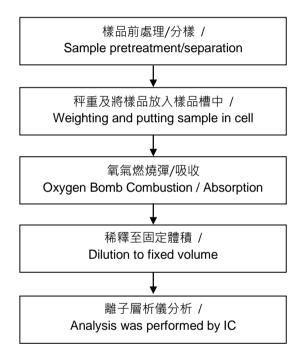
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鹵素分析流程圖 / Analytical flow chart of Halogen





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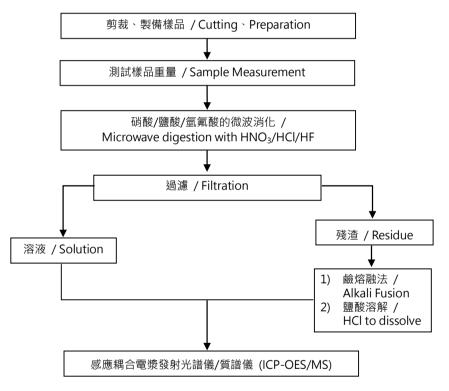
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元素(含重金屬)分析流程圖 / Analytical flow chart of Elements (Heavy metal included)

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.

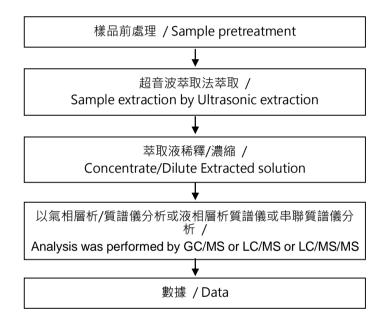


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全氟化合物(包含全氟辛酸/全氟辛烷磺酸/其相關化合物等等)分析流程圖 / Analytical flow chart – PFAS (including PFOA/PFOS/its related compound, etc.)





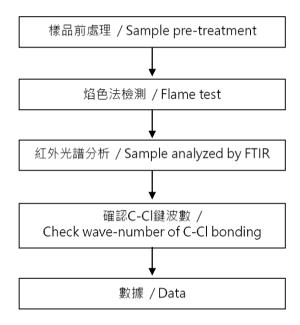
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聚氯乙烯物質判定分析流程圖 / Analysis flow chart - PVC





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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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** 報告結尾 (End of Report) **