

Test Report

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號 201, TUNG HWA N. ROAD, TAIPEI, 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) : 台灣化學纖維股份有限公司(FORMOSA CHEMICALS & FIBRE CORPORATION)

樣品名稱(Sample Description) : POLYCARBONATE (聚碳酸酯樹脂)

: TAIRILITE AC285X, AC383X, AC385X, AC386X, AC387X 樣品型號(Style/Item No.)

: 2016/05/30 收件日期(Sample Receiving Date)

測試期間(Testing Period) : 2016/05/30 TO 2016/06/03

測試需求(Test Requested)

依據客戶指定,參考ROHS2011/65/EU Annex II及其修訂指令(EU) 2015/863測試編、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.)

號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04 頁數(Page): 1 of 12

測試結果(Test Results) : 請見下一頁 (Please refer to next pages).



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Test Report

頁數 (Page): 2 of 12 號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號 201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C.

測試結果(Test Results)

測試部位(PART NAME)No.1 : 白色塑膠粒 (WHITE PLASTIC PELLETS (AC285X))

: 半透明白色塑膠粒 (TRANSLUCENT-WHITE PLASTIC PELLETS (AC383X)) 測試部位(PART NAME)No. 2

: 透明塑膠粒 (TRANSPARENT PLASTIC PELLETS (AC385X)) 測試部位(PART NAME)No.3 : 透明塑膠粒 (TRANSPARENT PLASTIC PELLETS (AC386X)) 測試部位(PART NAME)No.4 測試部位(PART NAME)No.5 : 透明塑膠粒 (TRANSPARENT PLASTIC PELLETS (AC387X))

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值 (MDL)	結果 (Result)		
				No. 1	No. 2	No. 3
鎘 / Cadmium (Cd)	mg/kg	參考IEC 62321-5 (2013), 以感 應耦合電漿原子發射光譜儀檢 測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n. d.	n. d.	n. d.
鉛 / Lead (Pb)	mg/kg	參考IEC 62321-5 (2013), 以感 應耦合電漿原子發射光譜儀檢 測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n. d.	n. d.	n. d.
汞 / Mercury (Hg)	mg/kg	參考IEC 62321-4 (2013), 以感 應耦合電漿原子發射光譜儀檢 測. / With reference to IEC 62321-4 (2013) and performed by ICP-AES.	2	n. d.	n. d.	n. d.
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考IEC 62321 (2008), 以UV-VIS檢測. / With reference to IEC 62321 (2008) and performed by UV-VIS.	2	n. d.	n. d.	n. d.



Test Report

頁數 (Page): 3 of 12 號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號 201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C.

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值	結果(Result)		
(Test Items)	(onit)	(Method)	(MDL)	No. 1	No. 2	No. 3
多溴聯苯總和 / Sum of PBBs	mg/kg		_	n.d.	n. d.	n. d.
一溴聯苯 / Monobromobiphenyl	mg/kg		5	n.d.	n. d.	n. d.
二溴聯苯 / Dibromobiphenyl	mg/kg		5	n.d.	n. d.	n. d.
三溴聯苯 / Tribromobiphenyl	mg/kg		5	n. d.	n. d.	n. d.
四溴聯苯 / Tetrabromobiphenyl	mg/kg		5	n.d.	n. d.	n. d.
五溴聯苯 / Pentabromobiphenyl	mg/kg		5	n. d.	n. d.	n. d.
六溴聯苯 / Hexabromobiphenyl	mg/kg		5	n. d.	n. d.	n. d.
七溴聯苯 / Heptabromobiphenyl	mg/kg		5	n. d.	n. d.	n. d.
八溴聯苯 / Octabromobiphenyl	mg/kg	6 L. T. G.	5	n. d.	n. d.	n. d.
九溴聯苯 / Nonabromobiphenyl	mg/kg	參考IEC 62321-6 (2015), 以氣	5	n. d.	n. d.	n. d.
十溴聯苯 / Decabromobiphenyl	mg/kg	相層析/質譜儀檢測. / With reference to IEC 62321-6	5	n. d.	n. d.	n. d.
多溴聯苯醚總和 / Sum of PBDEs	mg/kg	(2015) and performed by	-	n. d.	n. d.	n. d.
一溴聯苯醚 / Monobromodiphenyl ether	mg/kg	GC/MS.	5	n. d.	n. d.	n. d.
二溴聯苯醚 / Dibromodiphenyl ether	mg/kg	OC/ ING.	5	n. d.	n. d.	n. d.
三溴聯苯醚 / Tribromodiphenyl ether	mg/kg		5	n. d.	n. d.	n. d.
四溴聯苯醚 / Tetrabromodiphenyl ether	mg/kg		5	n. d.	n. d.	n. d.
五溴聯苯醚 / Pentabromodiphenyl ether	mg/kg		5	n. d.	n. d.	n. d.
六溴聯苯醚 / Hexabromodiphenyl ether	mg/kg		5	n. d.	n. d.	n. d.
七溴聯苯醚 / Heptabromodiphenyl ether	mg/kg		5	n. d.	n. d.	n. d.
八溴聯苯醚 / Octabromodiphenyl ether	mg/kg		5	n. d.	n. d.	n. d.
九溴聯苯醚 / Nonabromodiphenyl ether	mg/kg		5	n. d.	n. d.	n. d.
十溴聯苯醚 / Decabromodiphenyl ether	mg/kg		5	n. d.	n. d.	n. d.
鄰苯二甲酸丁苯甲酯 / BBP (Butyl	mg/kg	參考IEC 62321-8/CD (2013),	50	n. d.	n. d.	n. d.
Benzyl phthalate) (CAS No.: 85-68-		以氣相層析儀/質譜儀檢測. /				
7)		With reference to IEC 62321-				
鄰苯二甲酸二丁酯 / DBP (Dibutyl	mg/kg	8/CD (2013). Analysis was	50	n. d.	n. d.	n. d.
phthalate) (CAS No.: 84-74-2)		performed by GC/MS.				

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Test Report

頁數 (Page): 4 of 12 號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號 201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C.

測試項目 (Test Items)	, , , , , , , , , , , , , , , , , , , ,		方法偵測 極限值	結果 (Result)		
(lest liems)	(UIII L)	(method)	(MDL)	No. 1	No. 2	No. 3
鄰苯二甲酸二異丁酯 / DIBP (Di- isobutyl phthalate) (CAS No.: 84- 69-5)	mg/kg	參考IEC 62321-8/CD (2013), 以氣相層析儀/質譜儀檢測. /	50	n. d.	n. d.	n. d.
鄰苯二甲酸二 (2-乙基己基)酯 / DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mor/ko	With reference to IEC 62321-8/CD (2013). Analysis was performed by GC/MS.	50	n. d.	n. d.	n. d.

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值	結果(Result)	
(Test Items)	(unit) (method)		(MDL)	No. 4	No. 5
鏋 / Cadmium (Cd)	mg/kg	參考IEC 62321-5 (2013), 以感應耦合電漿原子發射光譜儀檢測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n. d.	n. d.
鉛 / Lead (Pb)	mg/kg	参考IEC 62321-5 (2013), 以感 應耦合電漿原子發射光譜儀檢 測. / With reference to IEC 62321-5 (2013) and performed by ICP-AES.	2	n. d.	n. d.
汞 / Mercury (Hg)	mg/kg	參考IEC 62321-4 (2013), 以感 應耦合電漿原子發射光譜儀檢 測. / With reference to IEC 62321-4 (2013) and performed by ICP-AES.	2	n, d.	n. d.
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	参考IEC 62321 (2008),以UV-VIS檢測./ With reference to IEC 62321 (2008) and performed by UV-VIS.	2	n. d.	n. d.



Test Report

號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04 頁數 (Page): 5 of 12

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號 201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C.

方法偵測 結果 (Result) 測試項目 單位 測試方法 極限值 (Test Items) (Unit) (Method) (MDL) No. 4 No. 5 多溴聯苯總和 / Sum of PBBs n. d. mg/kg n. d. -溴聯苯 / Monobromobiphenyl 5 n. d. n. d. mg/kg 二溴聯苯 / Dibromobiphenyl mg/kg 5 n. d. n. d. 5 三溴聯苯 / Tribromobiphenyl mg/kg n. d. n. d. 5 mg/kg 四溴聯苯 / Tetrabromobiphenyl n. d. n. d. 五溴聯苯 / Pentabromobiphenyl 5 n. d. mg/kg n. d. 六溴聯苯 / Hexabromobiphenyl 5 n. d. mg/kg n. d. 七溴聯苯 / Heptabromobiphenyl 5 mg/kg n. d. n. d. 八溴聯苯 / Octabromobiphenyl mg/kg 5 n. d. n. d. 參考IEC 62321-6 (2015), 以氣 mg/kg 九溴聯苯 / Nonabromobiphenyl 5 n. d. n. d. 相層析/質譜儀檢測. / With 十溴聯苯 / Decabromobiphenyl 5 mg/kg n. d. n. d. reference to IEC 62321-6 多溴聯苯醚總和 / Sum of PBDEs n. d. mg/kg n. d. (2015) and performed by - 溴聯苯醚 / Monobromodiphenyl ether mg/kg 5 n. d. n. d. GC/MS. 二溴聯苯醚 / Dibromodiphenyl ether 5 mg/kg n. d. n. d. 三溴聯苯醚 / Tribromodiphenvl ether 5 mg/kg n. d. n. d. 四溴聯苯醚 / Tetrabromodiphenyl ether 5 mg/kg n. d. n. d. 五溴聯苯醚 / Pentabromodiphenyl ether mg/kg 5 n.d. n. d. Hexabromodiphenyl ether 六溴聯苯醚 / 5 mg/kg n.d. n. d. 七溴聯苯醚 / Heptabromodiphenyl ether 5 mg/kg n. d. n. d. 八溴聯苯醚 / Octabromodiphenyl ether 5 n. d. mg/kg n. d. 九溴聯苯醚 / Nonabromodiphenyl ether mg/kg 5 n. d. n. d. 5 十溴聯苯醚 / Decabromodiphenyl ether mg/kg n. d. n. d. 鄰苯二甲酸丁苯甲酯 / BBP (Butvl mg/kg 50 n. d. n. d. |參考IEC 62321-8/CD (2013), Benzyl phthalate) (CAS No.: 85-68-以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8/CD (2013). Analysis was 鄰苯二甲酸二丁酯 / DBP (Dibutyl 50 n. d. n. d. performed by GC/MS. phthalate) (CAS No.: 84-74-2)

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Test Report

頁數 (Page): 6 of 12 號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號 201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C.

測試項目 (Test Items)	單位 (Unit)	測試方法 (Method)	方法偵測 極限值	結果 (Result)	
			(MDL)	No. 4	No. 5
鄰苯二甲酸二異丁酯 / DIBP (Di- isobutyl phthalate) (CAS No.: 84- 69-5)	mg/kg	參考IEC 62321-8/CD (2013), 以氣相層析儀/質譜儀檢測. /	50	n. d.	n. d.
郷苯二甲酸二 (2-乙基己基)酯 / DEHP (Di- (2-ethylhexyl) phthalate) (CAS No.: 117-81-7)	mg/kg	With reference to IEC 62321-8/CD (2013). Analysis was performed by GC/MS.	50	n. d.	n. d.

備註(Note):

- 1. mg/kg = ppm ; 0.1wt% = 1000ppm
- 2. n.d. = Not Detected (未檢出)
- 3. MDL = Method Detection Limit (方法偵測極限值)
- 4. "-" = Not Regulated (無規格值)
- 5. 此份報告取代CE/2016/56234報告. (This report supersedes the previous document bearing the test report number CE/2016/56234.)

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Test Report

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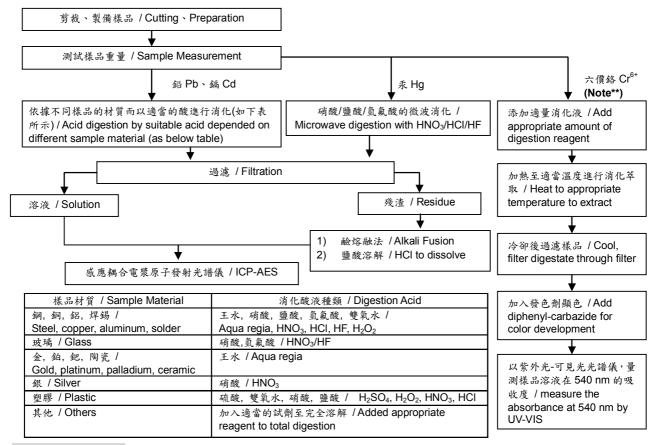
頁數 (Page): 7 of 12

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)

號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04

- 測試人員:王志瑋 / Technician: JR Wang
- 測試負責人:張啟興 / Supervisor: Troy Chang



Note** (For IEC 62321)

- (1) 針對非金屬材料加入鹼性消化液,加熱至 90~95℃萃取. / For non-metallic material, add alkaline digestion reagent and heat to
- (2) 針對金屬材料加入純水,加熱至沸騰萃取. / For metallic material, add pure water and heat to boiling.



Test Report

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號 201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C. 頁數 (Page): 8 of 12

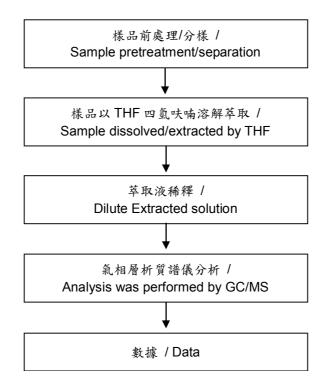
可塑劑分析流程圖 / Analytical flow chart - Phthalate

號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04

測試人員:徐毓明 / Technician: Andy Shu

測試負責人:張啟興 / Supervisor nt: Troy Chang

【測試方法/Test method: IEC 62321-8】





Test Report

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號 201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C. 頁數 (Page): 9 of 12

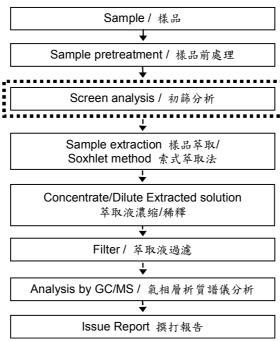
多溴聯苯/多溴聯苯醚分析流程圖 / Analytical flow chart - PBB/PBDE

號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04

測試人員: 翁賜彬 / Technician: Roman Wong

測試負責人:張啟興 / Supervisor: Troy Chang

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 _ . _ . ▶





Test Report

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號 201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C.

頁數 (Page): 10 of 12

* 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.)

號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04

CE/2016/56234 NO.1



CE/2016/56234 NO.2





Test Report

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號

201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C.

頁數 (Page): 11 of 12

CE/2016/56234 NO.3

號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04



CE/2016/56234 NO.4





Test Report

台灣化學纖維股份有限公司 FORMOSA CHEMICALS & FIBRE CORPORATION 台北市敦化北路201號 201, TUNG HWA N. ROAD, TAIPEI, TAIWAN, R. O. C.

頁數 (Page): 12 of 12

CE/2016/56234 NO.5

號碼(No.): CE/2016/56234A 日期(Date): 2016/06/04



** 報告結尾 (End of Report) **