

## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 1 of 35

長春石油化學股份有限公司

CHANG CHUN PETROCHEMICAL CO., LTD.

台北市松江路301號七樓

NO. 301 SONG KIANG ROAD 7TH FL., 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) : 長春石油化學股份有限公司 (CHANG CHUN PETROCHEMICAL CO., LTD.)  
樣品名稱(Sample Description) : Copper Foil  
樣品型號(Style/Item No.) : EPOXY GRADE(PLS)  
Lot No. : 7604001  
生產日期(Production Date) : 2016.03.31  
收件日期(Sample Receiving Date) : 2016/05/20  
測試期間(Testing Period) : 2016/05/20 TO 2016/05/27

### 測試需求(Test Requested) :

- (1) 依據客戶指定, 參考RoHS2011/65/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.)
- (2) 依據客戶指定, 檢測 PAHs 及其他測項. (As specified by client, to test PAHs and other item(s).)

測試結果(Test Results) : 請見下一頁 (Please refer to next 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指令暨(EU) 2015/863之限值要求. (Based on the performed tests on submitted samples, the test results of Cadmium, Lead, Mercury, Cr(VI), PBBs, PBDEs, DBP, BBP, DEHP, DIBP comply with the limits as set by RoHS and amending Directive (EU) 2015/863.)

(2) 根據客戶所提供的樣品, 18項多環芳香烴測試結果符合德國產品安全委員會(AfPS) GS PAHs第2類「列於德國產品安全法之其他產品」之限值要求. (Based upon the performed tests on the submitted sample, the test results of PAHs (18 items) comply with the limits of PAHs requirement (Category 2) 「Other products under ProdSG」 as set by German Committee on Product Safety (AfPS) GS PAHs.)

  
Troy Chang / Manager - Tech  
Signed for and on behalf of  
SGS TAIWAN LTD.  
Chemical Laboratory - Taipei

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號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 2 of 35

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## 測試結果(Test Results)

測試部位(PART NAME)No. 1 : 銅色金屬銅箔 (COPPER COLORED METAL FOIL)

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)	限值 (Limit)
				No. 1	
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.	100
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.	1000
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.	1000
六價鉻 / Hexavalent Chromium Cr(VI)(#2)	µg/cm <sup>2</sup>	參考IEC 62321-7-1 (2015), 以UV-VIS 檢測. / With reference to IEC 62321-7-1 (2015) and performed by UV-VIS.	0.10	n. d.	-
六價鉻 / Hexavalent Chromium Cr(VI)	mg/kg	參考US EPA 3060A (1996), 以UV-VIS / US EPA 7196A (1992) 檢測. / With reference to US EPA 3060A (1996). Analysis was performed by UV-Vis Spectrometry / US EPA 7196A (1992).	2	n. d.	-
鉍 / Bismuth (Bi)	mg/kg	參考US EPA 3050B (1996), 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	n. d.	-

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號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 3 of 35

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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)	限值 (Limit)
				No. 1	
銻 / Antimony (Sb)	mg/kg	參考US EPA 3050B (1996), 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	n. d.	-
鈹 / Beryllium (Be)	mg/kg	參考US EPA 3050B (1996), 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	n. d.	-
硒 / Selenium (Se)	mg/kg	參考US EPA 3050B (1996), 以感應耦合電漿原子發射光譜儀檢測. / With reference to US EPA 3050B (1996). Analysis was performed by ICP-AES.	2	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	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.	-
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.	-
聚氯乙烯 / 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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日期(Date) : 2016/05/27

頁數(Page): 4 of 35

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				No. 1	
六溴環十二烷及所有主要被辨別出的異構物 / Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified ( $\alpha$ - HBCDD, $\beta$ - HBCDD, $\gamma$ - HBCDD) (CAS No. : 25637-99-4 and 3194-55-6 (134237-51-7, 134237-50-6, 134237-52-8))	mg/kg	參考IEC 62321 (2008), 以氣相層析/質譜儀檢測. / With reference to IEC 62321 (2008). Analysis was performed by GC/MS.	5	n. d.	-
2-[2-羥基-3',5'-二-叔-丁基苯基]-苯並三唑 (紫外線吸收劑320) / 2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320) (CAS No. : 3846-71-7)	mg/kg	參考US EPA 3550C (2007), 以氣相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by GC/MS.	5	n. d.	-
富馬酸二甲酯 / Dimethyl Fumarate (CAS No. : 624-49-7)	mg/kg	參考US EPA 3550C (2007), 以氣相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by GC/MS.	0.1	n. d.	-
多氯聯苯 / Polychlorinated Biphenyls (PCBs) (CAS No. : 1336-36-3)	mg/kg	參考US EPA 3550C (2007), 以氣相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by GC/MS.	0.5	n. d.	-
多氯三聯苯 / Polychlorinated Terphenyls (PCTs)	mg/kg	參考US EPA 3550C (2007), 以氣相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by GC/MS.	0.5	n. d.	-

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號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 5 of 35

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				No. 1	
多氯奈 / Polychlorinated Naphthalene (PCNs)	mg/kg	參考US EPA 3550C (2007), 以氣相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by GC/MS.	5	n. d.	-
短鏈氯化石蠟 / Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins) (CAS No.: 85535-84-8)	mg/kg	參考US EPA 3550C (2007), 以氣相層析/質譜儀檢測. / With reference to US EPA 3550C (2007). Analysis was performed by GC/MS.	100	n. d.	-
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.	-
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. / With reference to ISO 17353 (2004). Analysis was performed by GC/FPD.	-	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.	-

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號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 6 of 35

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				No. 1	
雙酚 A / Bisphenol A (CAS No. : 80-05-7)	mg/kg	參考RSTS-HL-229-1, 以超高效能液相層析串聯質譜儀檢測. / With reference to RSTS-HL-229-1. Analysis was performed by UPLC-MSMS.	1	n. d.	-
甲醛 / Formaldehyde (CAS No. : 50-00-0)	mg/kg	參考ISO 17226-1(2008), 以高效液相層析儀/二極體陣列偵測器檢測. / With reference to ISO 17226-1(2008). Analysis was performed by HPLC/DAD.	3	n. d.	-
<b>多溴聯苯總和 / Sum of PBBs</b>	mg/kg	參考IEC 62321-6 (2015), 以氣相層析/質譜儀檢測. / With reference to IEC 62321-6 (2015) and performed by GC/MS.	-	n. d.	1000
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 / 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.	-
<b>多溴聯苯醚總和 / Sum of PBDEs</b>	mg/kg		-	n. d.	1000
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	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.	-	

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頁數(Page): 7 of 35

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				No. 1	
鄰苯二甲酸二正己酯 / DNHP (Di-n-hexyl phthalate) (CAS No. : 84-75-3)	mg/kg	參考IEC 62321-8/CD (2013), 以氣相層析儀/質譜儀檢測. / With reference to IEC 62321-8/CD (2013). Analysis was performed by GC/MS.	50	n. d.	-
鄰苯二甲酸二異丁酯 / DIBP (Di-isobutyl phthalate) (CAS No. : 84-69-5)	mg/kg		50	n. d.	1000
鄰苯二甲酸二丁酯 / DBP (Dibutyl phthalate) (CAS No. : 84-74-2)	mg/kg		50	n. d.	1000
鄰苯二甲酸丁苯甲酯 / BBP (Butyl Benzyl phthalate) (CAS No. : 85-68-7)	mg/kg		50	n. d.	1000
鄰苯二甲酸二(2-乙基己基)酯 / DEHP (Di-(2-ethylhexyl) phthalate) (CAS No. : 117-81-7)	mg/kg		50	n. d.	1000
鄰苯二甲酸二正辛酯 / DNOP (Di-n-octyl phthalate) (CAS No. : 117-84-0)	mg/kg		50	n. d.	-
鄰苯二甲酸二異壬酯 / DINP (Di-isononyl phthalate) (CAS No. : 28553-12-0; 68515-48-0)	mg/kg		50	n. d.	-
鄰苯二甲酸二異癸酯 / DIDP (Di-isodecyl phthalate) (CAS No. : 26761-40-0; 68515-49-1)	mg/kg		50	n. d.	-
鄰苯二甲酸二(2-甲氧基乙基)酯 / DMEP (Bis(2-methoxyethyl) phthalate) (CAS No. : 117-82-8)	mg/kg		50	n. d.	-
鄰苯二甲酸二(C7-11支鏈與直鏈)烷基酯 / DHNUP (1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters) (CAS No. : 68515-42-4)	mg/kg		50	n. d.	-
鄰苯二甲酸二(C6-8支鏈與直鏈)烷基酯, 富C7 / DIHP (1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich) (CAS No. : 71888-89-6)	mg/kg	50	n. d.	-	

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號碼(No.) : CE/2016/54383

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頁數(Page): 8 of 35

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CHANG CHUN PETROCHEMICAL CO., LTD.

台北市松江路301號七樓

NO. 301 SONG KIANG ROAD 7TH FL., 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 (MDL)	結果 (Result)	限值 (Limit)
				No. 1	
<b>多環芳香烴 / Polycyclic Aromatic Hydrocarbons (PAHs)</b>					
芘 / Acenaphthene (CAS No. : 83-32-9)	mg/kg	參考AfPS GS 2014:01 PAK, 以氣相層析/質譜儀檢測. / With reference to AfPS GS 2014:01 PAK. Analysis was performed by GC/MS.	0.2	n. d.	-
芴烯 / Acenaphthylene (CAS No. : 208-96-8)	mg/kg		0.2	n. d.	-
蔥 / Anthracene (CAS No. : 120-12-7)	mg/kg		0.2	n. d.	-
苯駢蔥 / Benzo[a]anthracene (CAS No. : 56-55-3)	mg/kg		0.2	n. d.	-
苯駢(a)芘 / Benzo[a]pyrene (CAS No. : 50-32-8)	mg/kg		0.2	n. d.	-
苯(b)苯駢芴 / Benzo[b]fluoranthene (CAS No. : 205-99-2)	mg/kg		0.2	n. d.	-
苯駢芘 / Benzo[g, h, i]perylene (CAS No. : 191-24-2)	mg/kg		0.2	n. d.	-
苯(k)苯駢芴 / Benzo[k]fluoranthene (CAS No. : 207-08-9)	mg/kg		0.2	n. d.	-
Chrysene (CAS No. : 218-01-9)	mg/kg		0.2	n. d.	-
二苯駢蔥 / Dibenzo[a, h]anthracene (CAS No. : 53-70-3)	mg/kg		0.2	n. d.	-
苯駢芴 / Fluoranthene (CAS No. : 206-44-0)	mg/kg		0.2	n. d.	-
芴 / Fluorene (CAS No. : 86-73-7)	mg/kg		0.2	n. d.	-
節酮芘 / Indeno[1, 2, 3-c, d] pyrene (CAS No. : 193-39-5)	mg/kg		0.2	n. d.	-
萘 / Naphthalene (CAS No. : 91-20-3)	mg/kg		0.2	n. d.	-
菲 / Phenanthrene (CAS No. : 85-01-8)	mg/kg		0.2	n. d.	-
芘 / Pyrene (CAS No. : 129-00-0)	mg/kg		0.2	n. d.	-
苯(j)苯駢芴 / Benzo[j]fluoranthene (CAS No. : 205-82-3)	mg/kg		0.2	n. d.	-
苯駢(e)芘 / Benzo[e]pyrene (CAS No. : 192-97-2)	mg/kg		0.2	n. d.	-
多環芳香烴18項總和 / Sum of 18 PAHs	mg/kg	-	n. d.	Δ	

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# 測試報告

# Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 9 of 35

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				No. 1	
<b>鹵素 / Halogen</b>					
鹵素 (氟) / Halogen-Fluorine (F) (CAS No. : 14762-94-8)	mg/kg	參考BS EN 14582 (2007), 以離子層析儀分析. / With reference to BS EN 14582 (2007). 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	n. d.	-
鹵素 (碘) / Halogen-Iodine (I) (CAS No. : 14362-44-8)	mg/kg		50	n. d.	-
<b>石棉 / Asbestos</b>					
陽起石綿 / Actinolite (CAS No. : 77536-66-4)	%	參考EPA 600/R-93/116 (1993) / 立體顯微鏡 (SM), 分散染色式偏光顯微鏡 (DS-PLM)及X光繞射光譜分析法 (XRD) / With reference to EPA 600/R-93/116 (1993). Analysis was performed by Stereo Microscope (SM), Dispersion Staining Polarized Light Microscope (DS-PLM) and X-ray Diffraction Spectrometer (XRD).	-	Negative	-
鐵石綿(褐石綿) / Amosite (CAS No. : 12172-73-5)	%		-	Negative	-
斜方角閃石綿 / Anthophyllite (CAS No. : 77536-67-5)	%		-	Negative	-
溫石綿(白石綿) / Chrysotile (CAS No. : 12001-29-5)	%		-	Negative	-
青石綿 / Crocidolite (CAS No. : 12001-28-4)	%		-	Negative	-
透閃石綿 / Tremolite (CAS No. : 77536-68-6)	%	-	Negative	-	
<b>偶氮 (AZO)</b>					
1): 4-氨基二苯 / 4-AMINODIPHENYL (CAS No. : 92-67-1)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-

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# 測試報告

# Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 10 of 35

長春石油化學股份有限公司

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				No. 1	
2): 聯苯胺 / BENZIDINE (CAS No. : 92-87-5)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
3): 4-氯鄰甲苯胺 / 4-CHLORO-0-TOLUIDINE (CAS No. : 95-69-2)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
4): 2-萘胺 / 2-NAPHTHYLAMINE (CAS No. : 91-59-8)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
5): 鄰氨基二甲基偶氮 / 0-AMINOAZOTOLUENE (CAS No. : 97-56-3)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
6): 對硝基鄰甲苯胺 / 2-AMINO-4-NITROTOLUENE (CAS No. : 99-55-8)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
7): 對氯苯胺 / P-CHLOROANILINE (CAS No. : 106-47-8)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
8): 4-甲氧基-間苯二胺 / 2,4-DIAMINOANISOLE (CAS No. : 615-05-4)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-

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# 測試報告

# Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 11 of 35

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				No. 1	
9): 4,4'-二氨基二苯甲烷 / 4,4'-DIAMINODIPHENYLMETHANE (CAS No. : 101-77-9)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
10): 3,3'-二氯聯苯胺 / 3,3'-DICHLOROBENZIDINE (CAS No. : 91-94-1)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
11): 3,3'-二甲氧基聯苯胺 / 3,3'-DIMETHOXYBENZIDINE (CAS No. : 119-90-4)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
12): 3,3'-二甲基聯苯胺 / 3,3'-DIMETHYLBENZIDINE (CAS No. : 119-93-7)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
13): 3,3'-二甲基-4,4'-二氨基二苯甲烷 / 3,3'-DIMETHYL-4,4'-DIAMINODIPHENYLMETHANE (CAS No. : 838-88-0)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
14): 2-甲氧基-5-甲基聯苯 / P-CRESIDINE (2-METHOXY-5-METHYLANILINE) (CAS No. : 120-71-8)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
15): 4,4'-亞甲基雙(氯苯胺) / 4,4'-METHYLENE-BIS-(2-CHLOROANILINE) (CAS No. : 101-14-4)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-

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# 測試報告

# Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 12 of 35

長春石油化學股份有限公司

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				No. 1	
16): 4,4'-氧化雙苯胺 / 4,4'- OXYDIANILINE (CAS No. : 101-80-4)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層 析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
17): 4,4'-硫代雙苯胺 / 4,4'- THIODIANILINE (CAS No. : 139-65-1)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層 析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
18): 鄰甲苯胺 / O-TOLUIDINE (CAS No. : 95-53-4)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層 析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
19): 2,4-二氨基甲苯 / 2,4- TOLUYLENEDIAMINE (CAS No. : 95-80-7)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層 析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
20): 2,4,5-三甲基苯胺 / 2,4,5- TRIMETHYLANILINE (CAS No. : 137-17-7)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層 析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
21): 鄰位甲氧基苯胺 / O-ANISIDINE (CAS No. : 90-04-0)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層 析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
22): 對氨基偶氮苯 / 4- AMINOAZOBENZENE (CAS No. : 60-09-3)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層 析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-

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# 測試報告

# Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 13 of 35

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				No. 1	
23): 2,4-二甲基苯胺 / 2,4-XYLIDINE (CAS No. : 95-68-1)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	n. d.	-
24): 2,6-二甲基苯胺 / 2,6-XYLIDINE (CAS No. : 87-62-7)	mg/kg	參考LFGB 82.02-2 (2013), 以氣相層析/質譜儀檢測. / With reference to LFGB 82.02-2 (2013). Analysis was performed by GC/MS.	3	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. \*\*= 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. 石綿定性分析試驗範圍: <0.1%~100%, 石綿鑑定的判定基準是以檢出含有石綿纖維為『Positive』, 未檢出石綿纖維為『Negative』。 / Testing range of asbestos qualitative analysis is from less than 0.1% to 100%. The judgment criterion: asbestos fibers being found is shown as "Positive"; asbestos fibers not being found is shown as "Negative".
8. (#2) =
  - a. 當六價鉻結果大於0.13  $\mu\text{g}/\text{cm}^2$ , 表示樣品表層含有六價鉻. / The sample is positive for Cr(VI) if the Cr(VI) concentration is greater than 0.13  $\mu\text{g}/\text{cm}^2$ . The sample coating is considered to contain Cr(VI).
  - b. 當六價鉻結果為n. d. (濃度小於0.10  $\mu\text{g}/\text{cm}^2$ ), 表示表層不含六價鉻. / The sample is negative for Cr(VI) if Cr(VI) is n. d. (concentration less than 0.10  $\mu\text{g}/\text{cm}^2$ ). The coating is considered a non-Cr(VI) based coating
  - c. 當六價鉻結果介於 0.10 及 0.13  $\mu\text{g}/\text{cm}^2$  時, 無法確定塗層是否含有六價鉻. / The result between 0.10  $\mu\text{g}/\text{cm}^2$  and 0.13  $\mu\text{g}/\text{cm}^2$  is considered to be inconclusive - unavoidable coating variations may influence the determination.

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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 14 of 35

長春石油化學股份有限公司

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9. \*\*\*: 該物質是由三丁基錫之測試結果計算得知。其MDL是針對三丁基錫之評估。(The substance was calculated by the test results of Tributyl Tin. The MDL was evaluated for Tributyl Tin.)

10. 參數換算表 / Parameter Conversion Table :

Please refer to [http://twap.sgs.com/sgsrsts/chn/download-REACH\\_tw.asp](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) 757/2010

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  $1\mu\text{g}/\text{m}^2$ .)

# 測試報告

# Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 15 of 35

長春石油化學股份有限公司

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台北市松江路301號七樓

NO. 301 SONG KIANG ROAD 7TH FL., TAIPEI TAIWAN R.O.C.



△ 德國產品安全委員會(AfPS) GS PAHs 要求 /

AfPS (German commission for Product Safety): GS PAHs requirements

項目 (Parameter)	第1類(Category 1)	第2類(Category 2)		第3類(Category 3)	
	意圖放入嘴內的材料或玩具會與皮膚有所接觸(超過30秒). (Material indented to be put in the mouth or toys with intended skin contact (longer than 30 s).)	不屬於第1類的材料並可預見與皮膚接觸逾30秒(長期或經常與皮膚接觸). (Materials not falling under category 1 with foreseeable contact to skin for longer than 30 seconds (long-term skin or frequent contact).)		可預見與皮膚接觸短於30秒(短期與皮膚接觸), 以及不屬於第1類或第2類的材料. (Materials not falling under category 1 or 2 with foreseeable contact to skin for less than 30 seconds (short-term skin contact).)	
		列於2009/48/EC之玩具 (Toy under 2009/48/EC)	列於德國產品安全法之其他產品 (Other products under ProdSG)	列於2009/48/EC之玩具 (Toy under 2009/48/EC)	列於德國產品安全法之其他產品 (Other products under ProdSG)
Naphthalene	< 1	< 2		< 10	
Acenaphthylene	< 1 Sum	< 5 Sum	< 10 Sum	< 20 Sum	< 50 Sum
Acenaphthene					
Fluorene					
Phenanthrene					
Anthracene					
Fluoranthene					
Pyrene					
Benzo[a]anthracene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Chrysene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[b]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[j]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[k]fluoranthene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[a]pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[e]pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Indeno[1, 2, 3-c, d] pyrene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Dibenzo[a, h]anthracene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
Benzo[g, h, i]perylene	< 0.2	< 0.2	< 0.5	< 0.5	< 1
18項PAH總濃度 (Sum of 18 PAH)	< 1	< 5	< 10	< 20	< 50

單位(Unit) : mg/kg

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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 16 of 35

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CHANG CHUN PETROCHEMICAL CO., LTD.

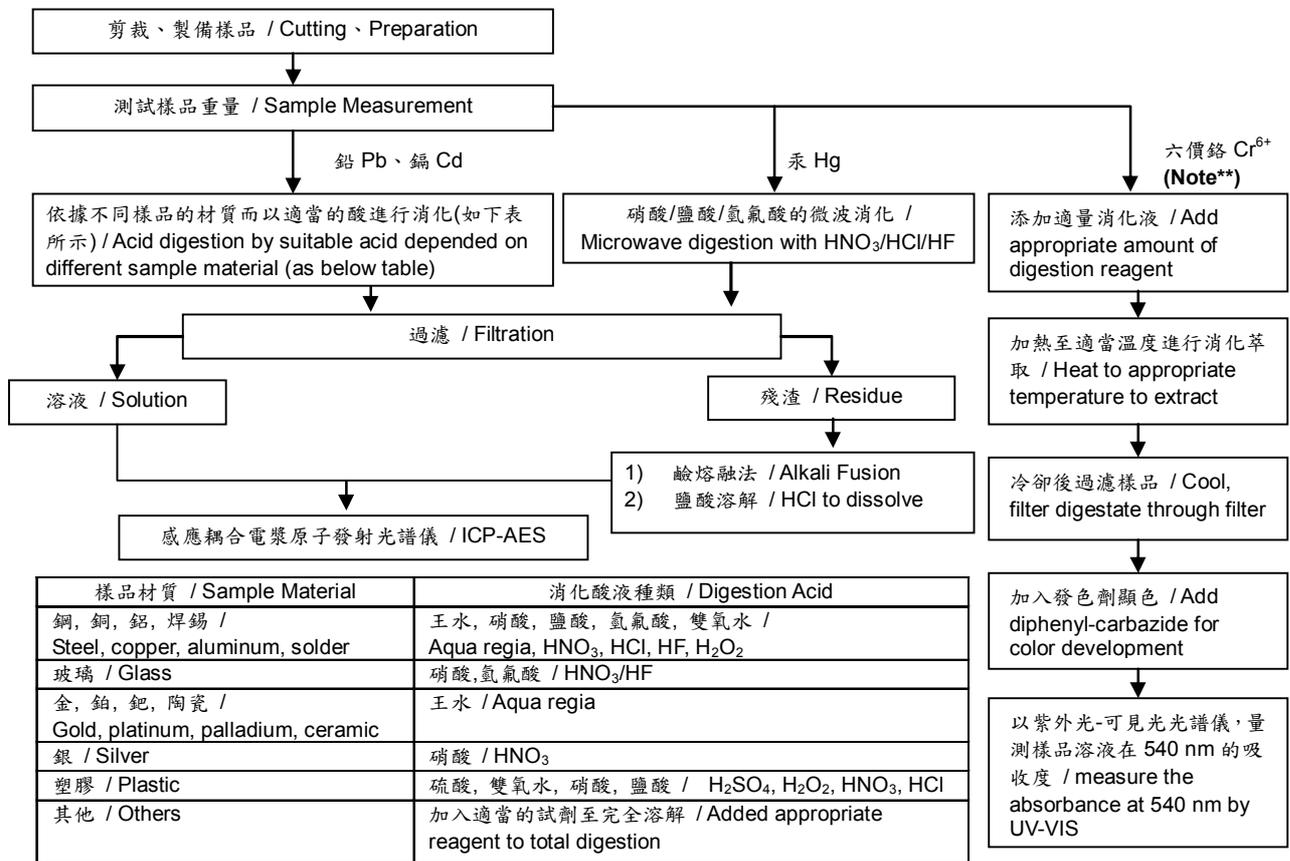
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根據以下的流程圖之條件，樣品已完全溶解。(六價鉻測試方法除外)

These samples were dissolved totally by pre-conditioning method according to below flow chart. (Cr<sup>6+</sup> test method excluded)



**Note\*\* (For IEC 62321)**

- (1) 針對非金屬材料加入鹼性消化液，加熱至 90~95°C 萃取。 / For non-metallic material, add alkaline digestion reagent and heat to 90~95°C.
- (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.

## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 17 of 35

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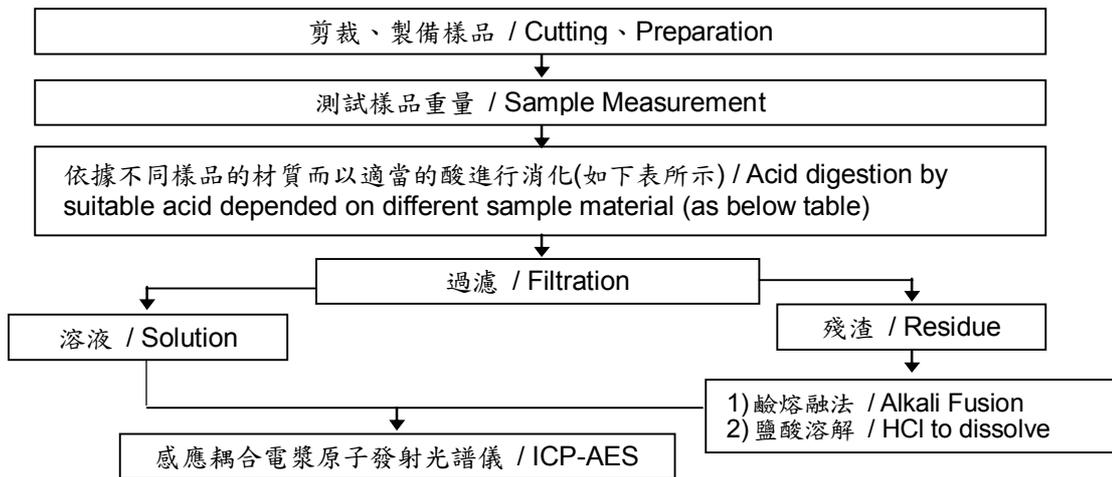
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根據以下的流程圖之條件，樣品已完全溶解。 / These samples were dissolved totally by pre-conditioning method according to below flow chart.

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



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

## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 18 of 35

長春石油化學股份有限公司

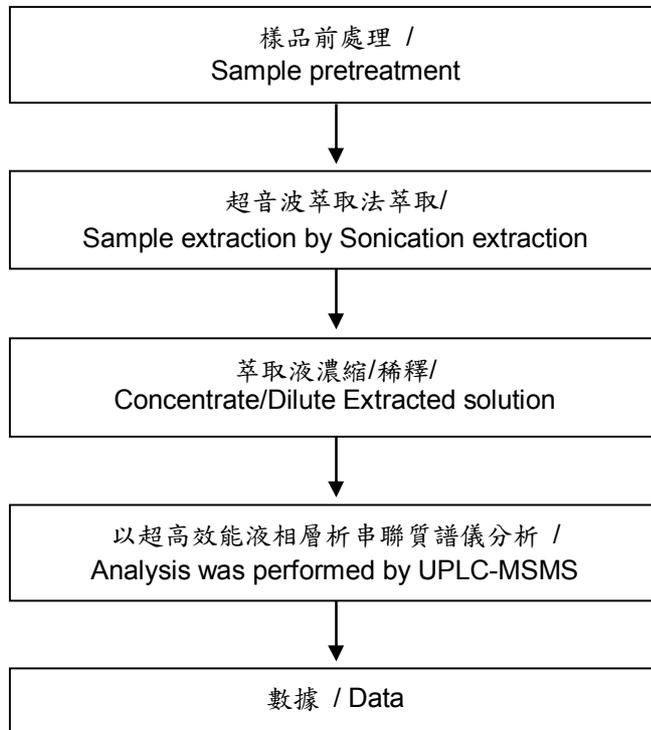
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### 雙酚A分析流程圖 / Analytical flow chart - Bisphenol A



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## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 19 of 35

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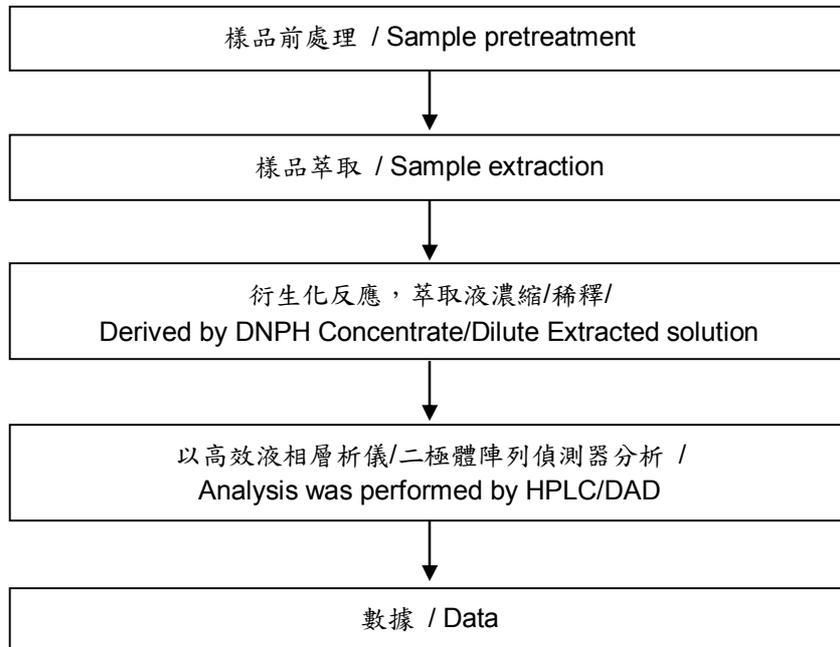
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### 甲醛分析流程圖 / Analytical flow chart - Formaldehyde



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號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

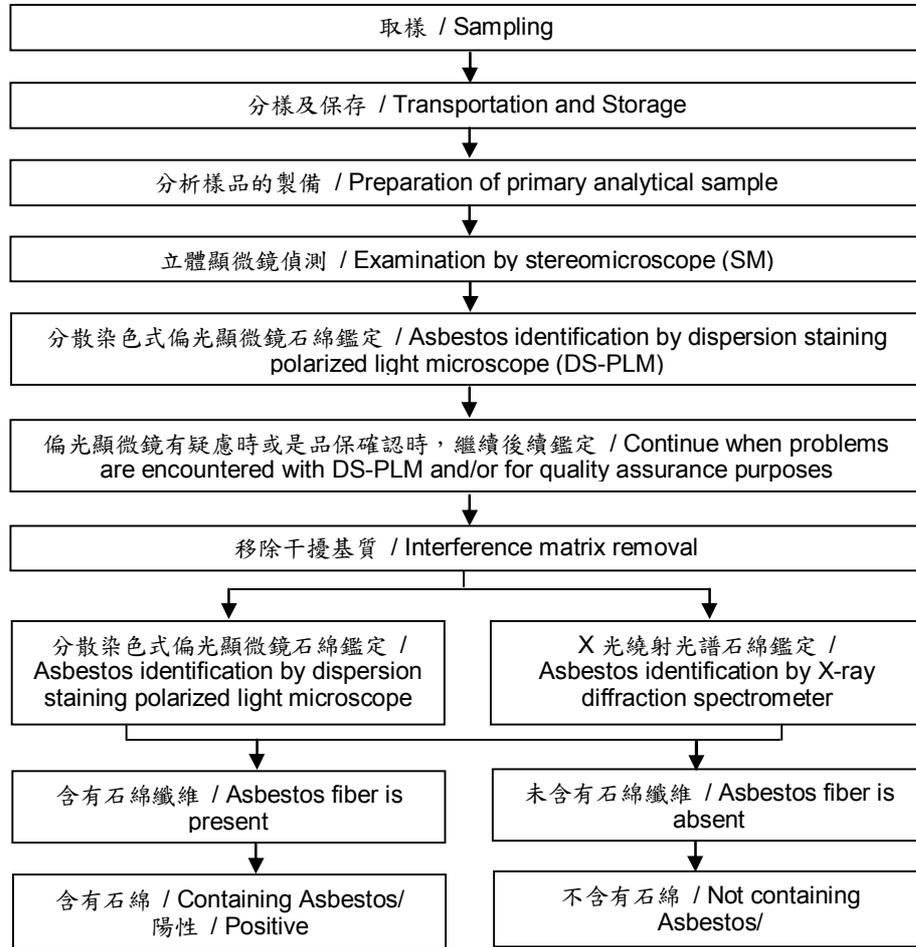
頁數(Page): 20 of 35



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### 石綿鑑定分析流程圖 / Analysis flow chart for determination of Asbestos

#### 【參考方法(Reference method): EPA 600/R-93/116】



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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 21 of 35

長春石油化學股份有限公司

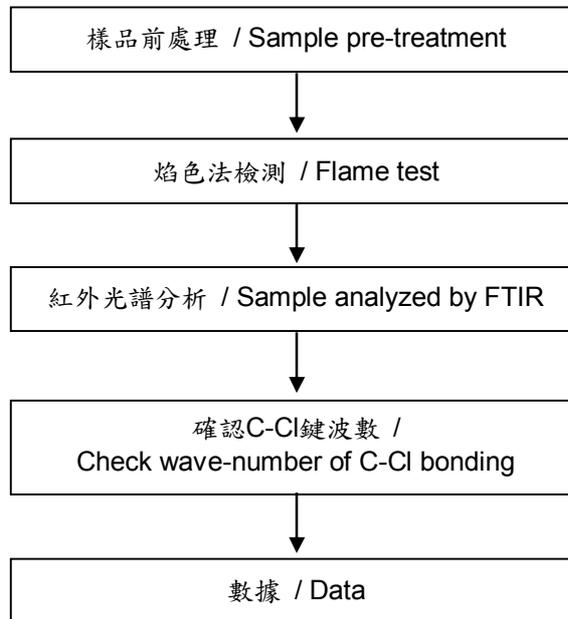
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### 聚氯乙烯物質判定分析流程圖 / Analysis flow chart - PVC



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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 22 of 35

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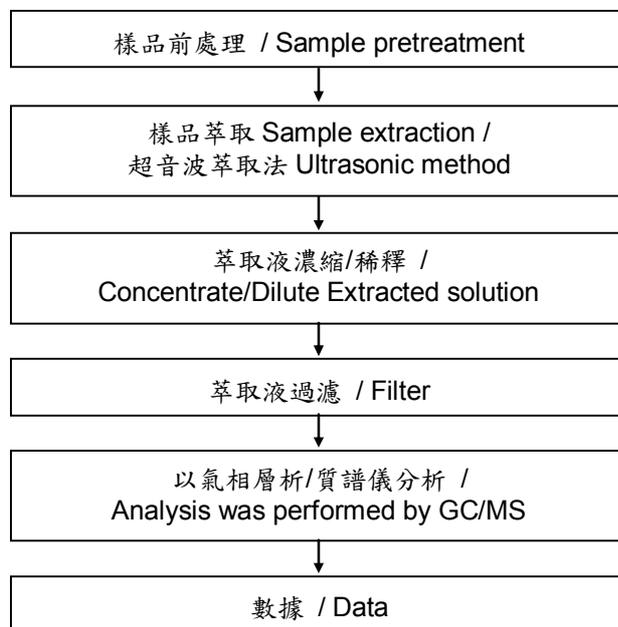
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### 氯化石蠟分析流程圖 / Analytical flow chart - Chlorinated Paraffins



## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 23 of 35

長春石油化學股份有限公司

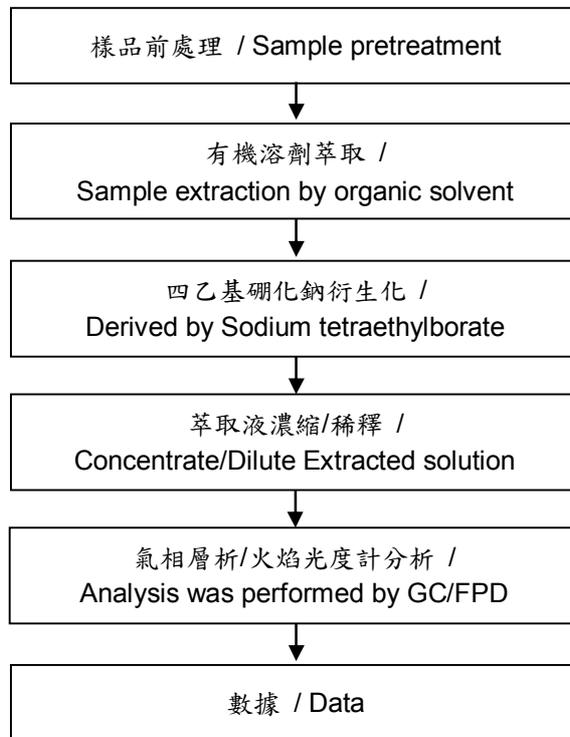
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### 有機錫分析流程圖 / Analytical flow chart - Organic-Tin



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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 24 of 35

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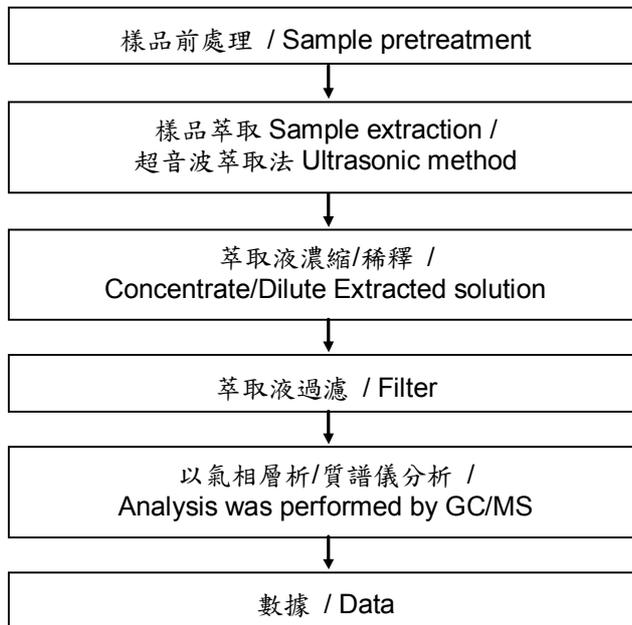
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### 多氯三聯苯分析流程圖 / Analytical flow chart - PCTs



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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 25 of 35

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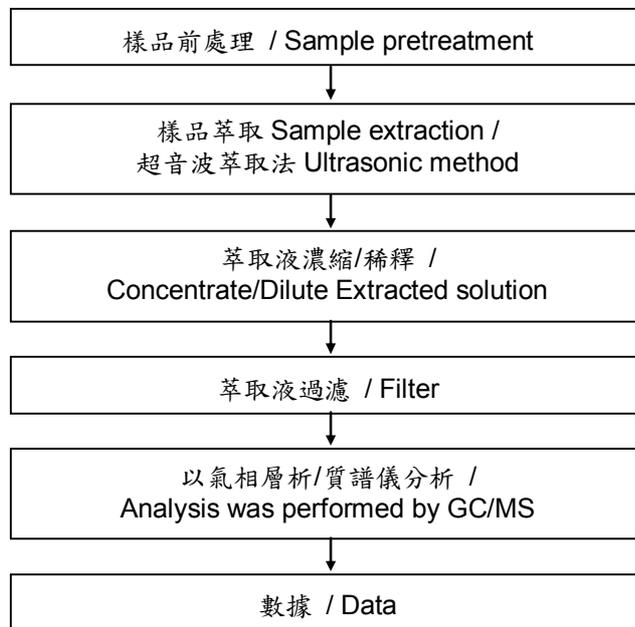
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### 多氯奈分析流程圖 / Analytical flow chart - PCNs



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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 26 of 35



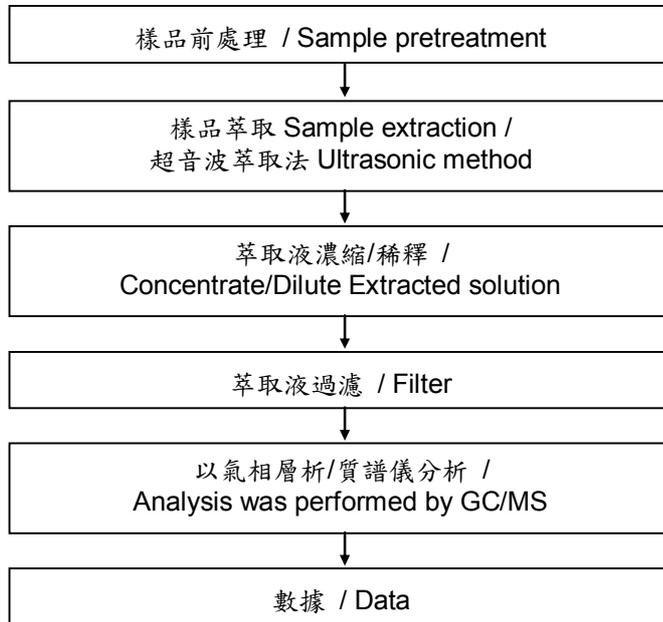
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### 富馬酸二甲酯分析流程圖 / Analytical flow chart - Dimethyl Fumarate



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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 27 of 35

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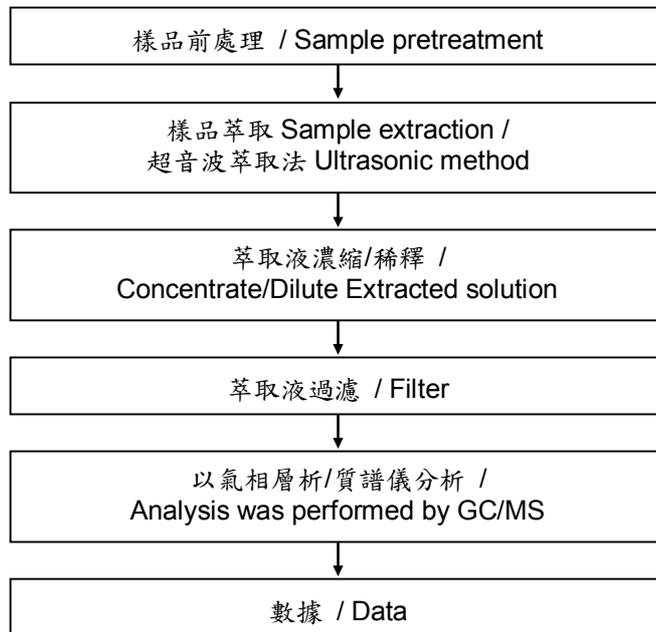
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### 多氯聯苯分析流程圖 / Analytical flow chart - PCBs



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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 28 of 35

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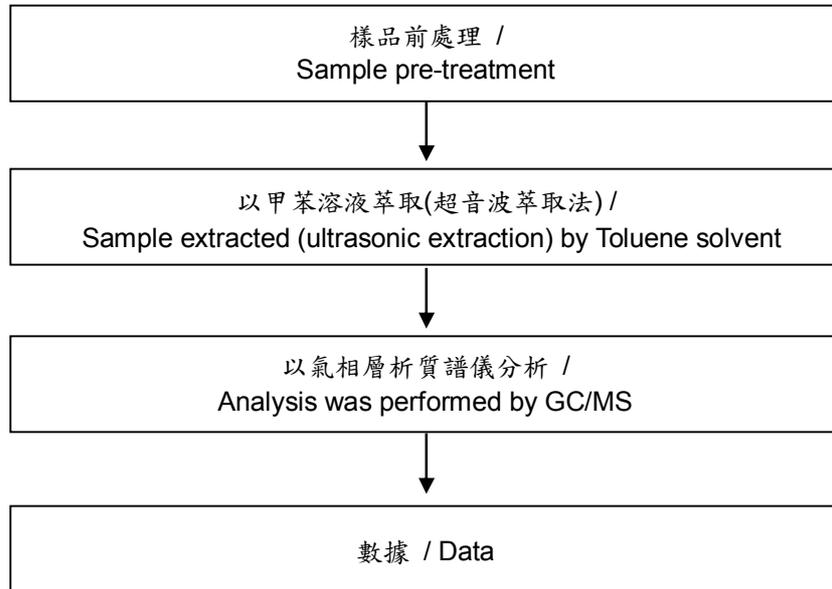
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### 多環芳香烴分析流程圖 /

### Analytical flow chart - PAHs (Polycyclic Aromatic Hydrocarbons)



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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 29 of 35

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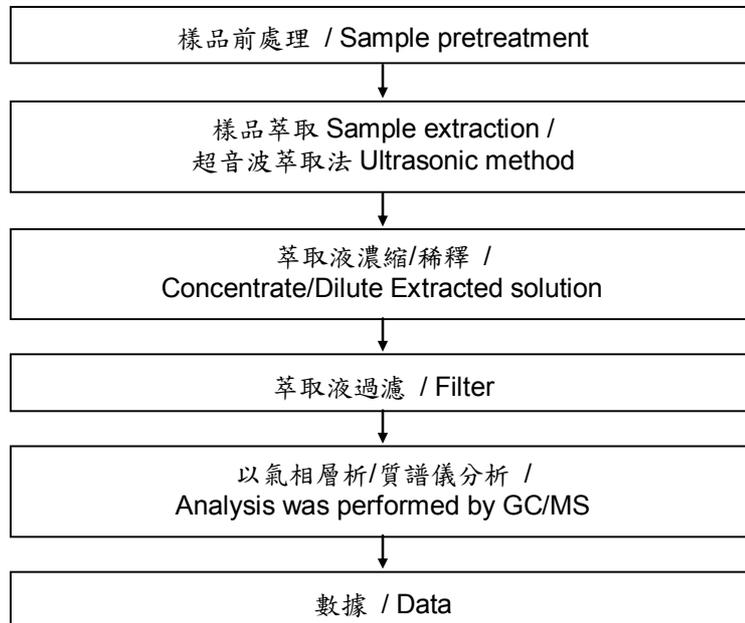
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### 六溴環十二烷分析流程圖 / Analytical flow chart - HBCDD



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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 30 of 35

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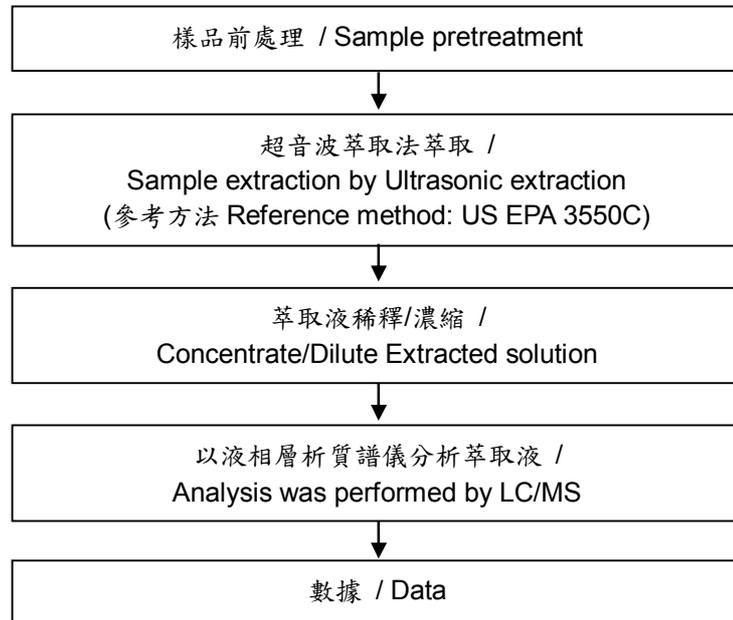
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NO. 301 SONG KIANG ROAD 7TH FL., TAIPEI TAIWAN R.O.C.



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



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## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 31 of 35

長春石油化學股份有限公司

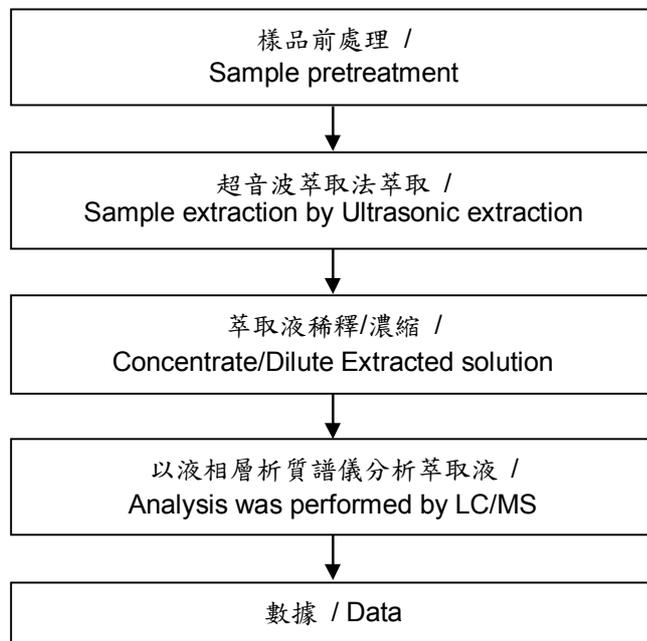
CHANG CHUN PETROCHEMICAL CO., LTD.

台北市松江路301號七樓

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



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## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 32 of 35

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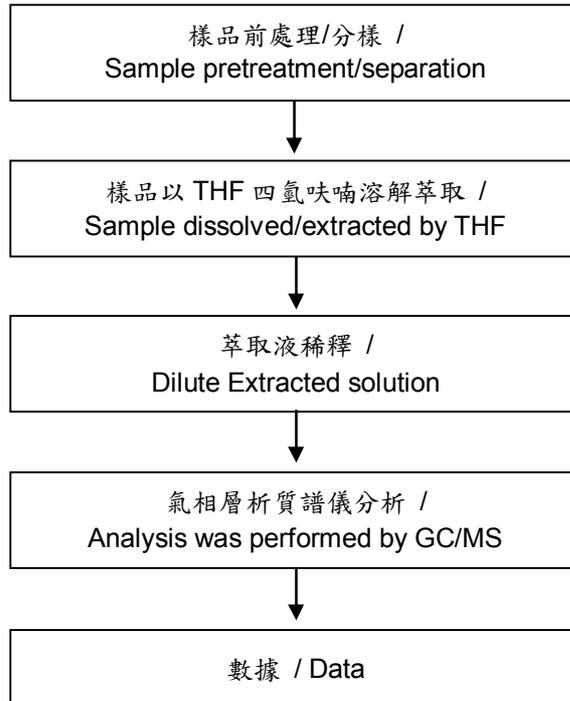
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### 可塑劑分析流程圖 / Analytical flow chart - Phthalate

#### 【測試方法/Test method: IEC 62321-8】



## 測試報告

## Test Report

號碼(No.) : CE/2016/54383

日期(Date) : 2016/05/27

頁數(Page): 33 of 35

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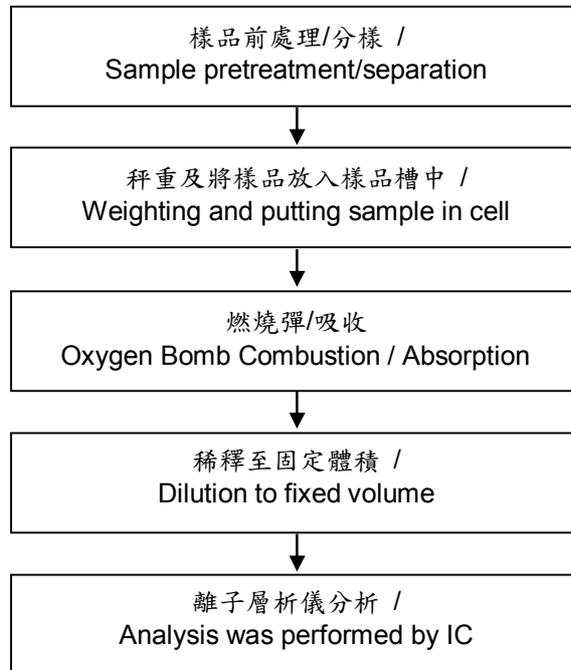
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### 鹵素分析流程圖 / Analytical flow chart - Halogen



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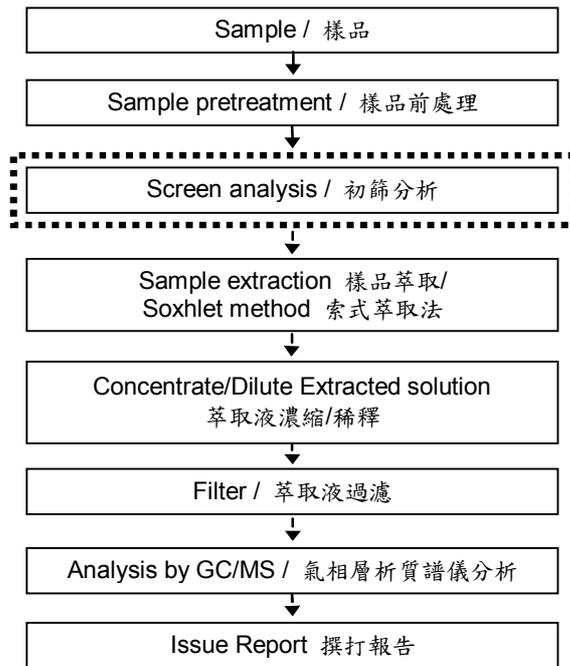
頁數(Page): 34 of 35



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

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 - - - ->



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日期(Date) : 2016/05/27

頁數(Page): 35 of 35

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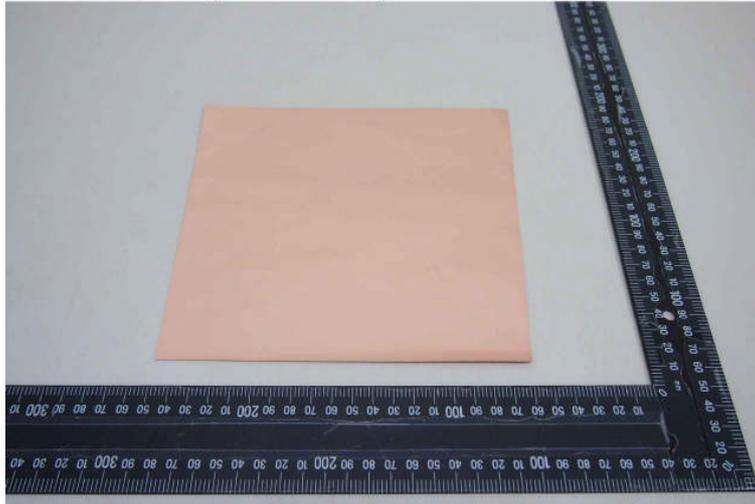
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\* 照片中如有箭頭標示，則表示為實際檢測之樣品/部位。 \*  
(The tested sample / part is marked by an arrow if it's shown on the photo.)

### CE/2016/54383



\*\* 報告結尾 (End of Report) \*\*

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